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WATER QUALITY MONITORING NETWORK

Federal Water Pollution Control Administration
Portland, Oregon

January 1969

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FEDERAL WATER POLLUTION CONTROL ADMINISTRATION

NORTHWEST REGION, PORTLAND, OREGON

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I. Summary

A. General

Water quality problems requiring monitoring in the Northwest Region vary widely due to the physiographic and socio-economic differences that exist between subregional areas. Problems in Oregon and Washington west of the Cascade Mountains, for example, are the result of rapid population growth compounded by increasing waste loads from wood products, foods, metals, petroleum and petro-chemical type industries. Waters requiring monitoring in this subregion include fresh water, marine tributaries, lakes, estuaries and off-shore waters of the Pacific Ocean.

Water quality problems east of the Cascade Mountains in Washington, Oregon and southern Idaho are associated with irrigation, livestock, water impoundments, wood and food processing industries, atomic reactors and a scattering of urban population centers. Problems in this subregion result primarily from water regulation and diversion coupled with the secondary effects of

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nutrient enrichment and aquatic biota decay.

The subregional area encompassing northern Idaho and western Montana is typified mainly by disposal problems associated with mining, metals processing and, to a lesser extent, wood and food products manufacturing. A scattering of problem areas involving bacteria, organics and nutrients also exist.

B. Existing Program

The FWPCA monitoring system in the Northwest Region currently consists of fifty-eight stations, twenty-eight of which are long-term for base-trend and standards monitoring. Three of these are long-term automatic monitoring stations. The remaining thirty stations are planned for about one year's duration to provide state agencies (mainly Idaho and Montana) and in-house programs with base quality data for planning purposes. These thirty short-term stations, when terminated, will be replaced as possible by about twenty new short-term stations requested by the FWPCA, River Basins Water Quality Management Planning group (see Appendix I).

C. Planned Program

The interstate stream monitoring network now being planned provides for continuance of twenty-eight FWPCA long-term stations and activation of an additional

sixteen new stations beginning in about 4th quarter FY 1969. State agencies will operate sixty-eight stations as their contribution to the network. By the year 1974, it is estimated that thirty additional long-term FWPCA stations will be needed for water quality assessment work.

With the exception of the River Temperature Reporting Network now being developed by FWPCA's Columbia River Thermal Effects Studies group, no plans are presently being made to activate additional automatic long-term multiple-paramenter monitors. The RTRN plan, as proposed, calls for installation of six thermographs by the end of FY 1969 and an additional five or six by the middle of FY 1970. At present, about thirty Federal agency temperature recording devices exist within the FWPCA-State monitoring network. Two of these are presently operated by FWPCA on a continuous basis.

FWPCA does not, at the present time, monitor estuaries and other marine waters. State agencies perform most of this work. Beginning in about FY 1971, it is proposed that a coordinated FWPCA-State estuarine water quality monitoring network be established. By the year 1974 at least 175 FWPCA marine monitoring stations are expected to be needed.

II. Introduction

The FWPCA-State water quality monitoring network for remaining FY 1969 and FY 1970 will provide minimum coverage of those interstate streams and associated tributaries located mainly above tidal influence. Covered will be the Snake River Basin (Idaho, Oregon and Washington), the Upper Columbia River Basin above the Yakima River (Washington, Idaho and Montana) and the Lower Columbia River and tributaries from the mouth of the Yakima River to the Pacific Ocean. Interstate streams and tidal waters of the Northwest Region are shown on the map (Figure I).

III. Coordination

State agencies will monitor many small interstate tributaries such as those entering the Snake Basin from Wyoming and Nevada. FWPCA will continue to monitor international waters below the Canadian border and a number of state-line points. Other key stations, particularly on the Columbia, Willamette, Snake, Clark Fork, Pend Oreille and Coeur d'Alene Rivers, will be shared between agencies (See Table I).

The U. S. Geological Survey operate about twenty-five water quality stations within the FWPCA-State network. Stations operated by this agency are listed in the OWDC Index to Catalog of Information on Water Data. Many parameters required for standards monitoring, however, are not now collected by that agency.

The Washington Water Pollution Control Commission is the only

BRITISH COLUMBIA
WASHINGTON
MONTANA
PACIFIC OCEAN
COLUMBIA PACIFIC
NORTHWEST REGION
INTERSTATE WATERS
IDAHO
OREGON
CALIFORNIA
NEVADA
UTAH

Figure I

TABLE

COORDINATED FWPCA-STATE WATER QUALITY MONITORING NETWORK
Interstate and Associated Tributaries
FY 1969-70

Basin/Station	** Map Ref. No.	Collection Agency: Federal FWPCA	Idaho ISDH	Wash. WWPCC	Oregon OSSA	Frequency 1/
Kootenai River Basin						
At Libby, K.R., Montana	1-F	X				M
*Near Troy, Ross Creek, Montana	-	X				Q
*Near Troy, Lake Creek, Montana	-	X				M
*Troy, Blw. Lake Creek, Montana	-	X				M
Leonia, K.R., Idaho	2-F	X				M
Porthill, K.R., Idaho	3-F	X				M
Eileen, Moyie R., Idaho	1-I		X			Q
Clark Fork River Basin						
Deer Lodge, C.F.R., Montana	4-F	X				M
Garrison, C.F.R., Montana	5-F	X				M
Missoula, C.F.R., Montana	6-F	X				M
Alberton, C.F.R., Montana	7-F	X				M
Plains, C.F.R., Montana	8-F	X				M
Blw. Thompson Falls, C.F.R., Montana	9-F	X				M
*Near Noxon, Bull R., Montana	-	X				M
*Near Noxon, M.F. Bull R., Montana	-	X				Q
Blw. Cab. Gorge Dam, C.F.R., Idaho	10-F	X				M
Bitterroot River Basin						
*Near Darby, B.R., Montana	-	X				Q
*Near Missoula, B.R., Montana	-	X				Q
Flathead River Basin						
*Near Mouth, Logan Cr., Montana	-	X				Q
*Near Mouth, Stillwater R., Montana	-	X				Q
Near Kila, Ashley Cr., Montana	11-F	X				Q
*Near Marion, Ashley Cr., Montana	-	X				Q
Blw, Kalispell, Ashley Cr., Montana	12-F	X				Q
Blw. Ashley Creek, F.R., Montana	13-F	X				M
Polson, F.R., Montana	14-F	X				M

1/ WK-Weekly; SM-Semimonthly; M-Monthly; Q-Quarterly (Season); Cont-Continuous
* Short-term planning data
Note: Montana State Health Department has no plans for long-term monitoring in the Columbia drainage.
** See Map "FWPCA-State Water Quality Monitoring Network".

Basin/Station	** Map Ref. No.	Collection Agency: Federal FWPCA	Idaho ISDH	Wash. WWPCC	Oregon OSSA	Frequency
Pend Oreille River Basin						
Priest River, Priest R., Idaho	2-I		X			Q
Newport, P.O.R., Washington	15-F	X				M
Metaline Falls, P.O.R., Washington	16-F	X				M
Coeur d'Alene River Basin						
Enaville, N.F. C.d'A.R., Idaho	17-F	X				M
Cataldo, C.d'A.R., Idaho	18-F	X				M
Enaville, S.F. C.d'A.R., Idaho	3-1		X			Q
Rose Lake, C.d'A.R., Idaho	19-F	X				M
Coeur d'Alene Lake, Idaho	4-I		X			Q
Spokane River Basin						
Post Falls, S.R., Idaho	20-F	X				M
Otis Orchards, S.R., Washington	1-W			X		M
Nine Mile Dam, S.R., Washington	21-F	X				M
Seven Mile Bridge, S.R., Washington	2-W			X		M
Long Lake, S.R., Washington	3-W			X		M
Kettle River Basin						
Lauier, K.R., Washington	22-F	X				M
Barstow, K.R., Washington	4-W			X		Q
Okanogan River Basin						
Oroville, O.R., Washington	5-W			X		Q
Malott, O.R., Washington	6-W			X		Q
Similkameen River Basin						
Nighthawk, S.R., Washington	7-W			X		Q
Snake River Basin						
Chester, Falls R., Idaho	5-I		X			Q
Teton, Teton R., Idaho	6-I		X			Q

** See Map "FWPCA-State Water Quality Monitoring Network".

Basin/Station	** Map Ref. No.	Collection Agency: Federal FWPCA	Idaho ISDH	Wash. WWPCC	Oregon OSSA	Frequency
Snake River Basin (Cont.)						
Rexburg, Henrys Fork R., Idaho	7-I		X			Q
Pocatello, Portneuf R., Idaho	8-I		X			Q
Woodruff, Malad R., Idaho	9-I		X			Q
Raft River Bridge, Raft R., Idaho	10-I		X			Q
Oakley, Goose Creek, Idaho	11-I		X			Q
Hot Springs, Bruneau R., Idaho	12-I		X			Q
Palisades Dam, S.R., Idaho	13-I		X			Q
Heise, S.R., Idaho	14-I		X			M
Lorenzo, S.R., Idaho	15-I		X			Q
Shelley, S.R., Idaho	16-I		X			M
Blackfoot, S.R., Idaho	17-I		X			M
American Falls Dam, S.R., Idaho	23-F	X				M
Minidoka, S.R., Idaho	18-I		X			Q
Milner Dam, S.R., Idaho	24-F	X				M-Cont.
Buhl, S.R., Idaho	19-I		X			Q
Hammet, S.R., Idaho	25-F	X				M
Marsing, S.R., Idaho	26-F	X				M
Adrain, S.R., Oregon	1-O				X	M
*Boise, Boise R., Idaho	-	X				Q
Boise, Boise R., Idaho	20-I		X			Q
Caldwell, Boise R., Idaho	21-I		X			Q
Parma, Boise R., Idaho	27-F	X				M
Nyssa, Owyhee R., Oregon	2-O				X	Q
Nyssa, S.R., Oregon	3-O				X	Q
Ontario, S.R., Oregon	4-O				X	Q
*Near Mouth. N.F. Payette R., Idaho	-	X				Q
*Banks, Payette R., Idaho	-	X				Q
*Payette, Payette R., Idaho	-	X				Q
Payette, Payette R., Idaho	22-I		X			Q
Weiser, S.R., Idaho	28-F	X				M
*Huntington, Burnt R., Oregon	-	X				Q

* Short-term planning data

** See Map "FWPCA-State Water Quality Monitoring Network".

Basin/Station	** Map Ref. No.	Collection Agency: Federal FWPCA	Idaho ISDH	Wash. WWPCC	Oregon OSSA	Frequency
Snake River Basin (Cont.)						
*Brownlee Dam, S.R., Oregon	-	X				M
*Oxbow Dam, S.R., Oregon	-	X				M
Huntington, Burnt R., Oregon	5-O				X	Q
Hells Canyon, S.R., Oregon	29-F	X				M
Paradise, Grande Ronde R., Washington	30-F	X				Q
*Near Mouth Grande Ronde R., Washington	-	X				Q
Asotin, S.R., Washington	31-F	X				M
Lewiston, Clearwater R., Idaho	23-I		X			Q
Blw. Lewiston, S.R., Washington	32-F	X				M
Princeton, Palouse R., Idaho	33-F	X				M
Palouse, Palouse R., Idaho	34-F	X				M
*Colfax, Palouse R., Washington	-	X				Q
*Abv. Colfax, S.F. Palouse R., Washington	-	X				Q
*Blw. Pullman, S.F. Palouse R., Washington	-	X				Q
Hooper, Palouse R., Washington	35-F	X				M
Ice Harbor, S.R., Washington	36-F	X				M
Columbia River M.S.B.						
Northport, C.R., Washington	37-F	X				M
Bridgeport, C.R., Washington	38-F	X				M
Pateros, Methow R., Washington	8-W			X		Q
Chelan, Chelan R., Washington	9-W			X		Q
Entiat, Entiat R., Washington	10-W			X		Q
Wenatchee, Wenatchee R., Washington	11-W			X		Q
Beverly, Crab Cr., Washington	12-W			X		Q
Rock Isl. Dam, C.R., Washington	39-F	X				M
Priest Rapids Dam, C.R., Washington	13-W			X		M
Kiona, Yakima R., Washington	40-F	X				M
Pasco, C.R., Washington	41-F	X				M
Touchet, Walla Walla R., Washington	14-W			X		M
McNary Dam, C.R., Oregon	42-F	X				M
*Tygh Valley, White R., Oregon	-	X				Q

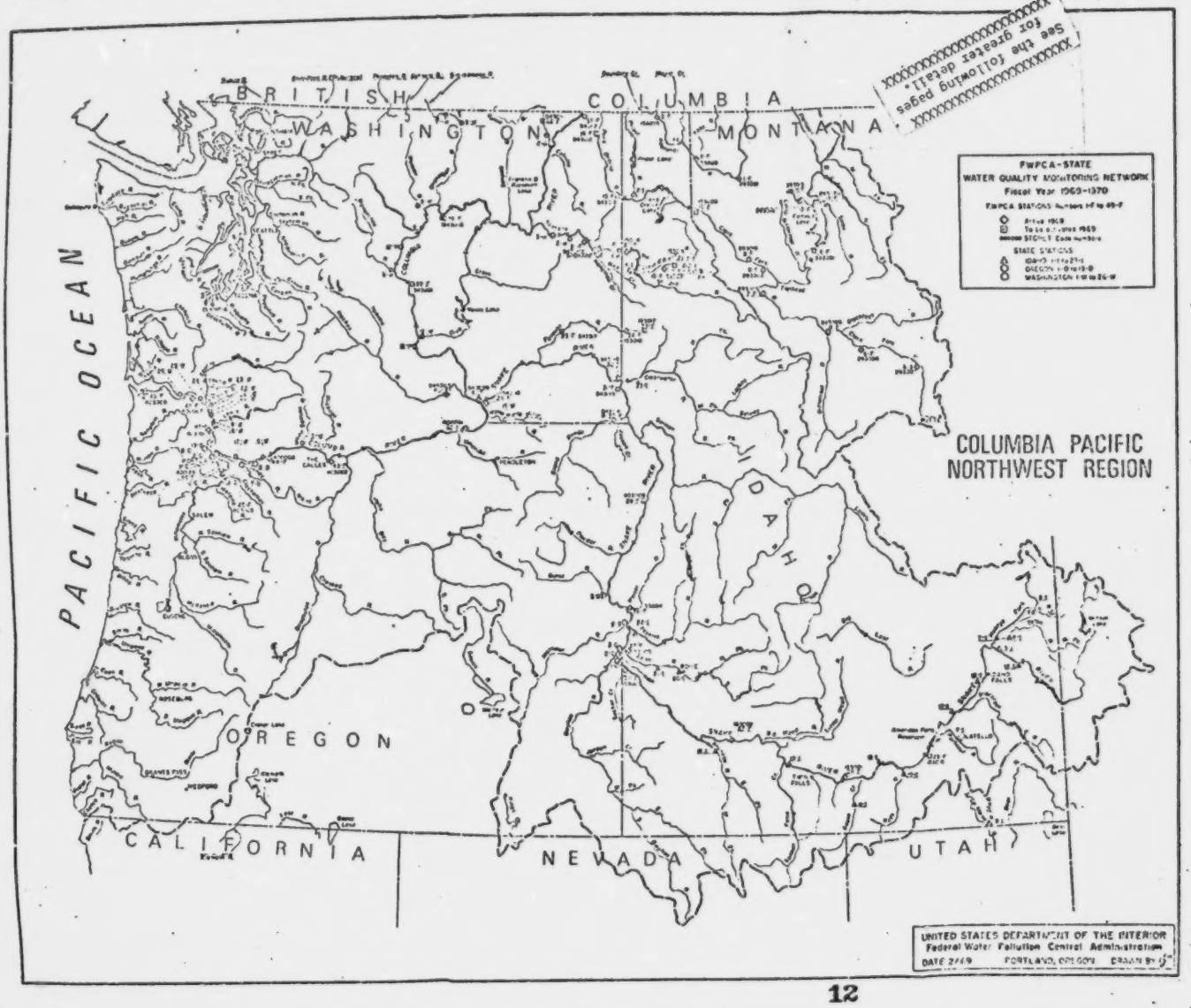
* Short-term planning data

** See Map "FWPCA-State Water Quality Monitoring Network".

Basin/Station	** Map Ref. No.	Collection Agency: Federal FWPCA	Idaho ISDH	Wash. WATPCC	Oregon OSSA	Frequency
Columbia River M.S.B. (Cont.)						
The Dalles, C.R., Oregon	43-F	X				M
*Abv. Goldendale, L. Klickitat R., Washington	-	X				Q
*Blw. Goldendale, L. Klickitat R., Washington	-	X				Q
Underwood, White Salmon R., Washington	15-W			X		M
Bonneville Dam, C.R., Oregon	44-F	X				SM
Blw. Bonneville Dam, Washington	16-W			X		Q
Rooster Rock, C.R., Oregon	6-0				X	M
Washougal, Washougal R., Washington	17-W			X		M
I-80 Bridge, Sandy River, Oregon	7-0				X	M
I-5 Bridge, C.R., Oregon	8-0				X	M
Blw. Willamette River, C.R. 030	18-W			X		Q
Blw. Willamette River, C.R. 031	19-W			X		Q
Abv. Oregon City, Willamette R., Oregon	9-0				X	WK-Cont.
Blw. Oregon City, Willamette R., Oregon	45-F	X				SM-Cont.
Staff Jennings, Willamette R., Oregon	10-0				X	WK
Steel Bridge, Willamette R., Oregon	11-0				X	WK
Portland, Willamette R., Oregon	46-F	X				SM-Cont.
SP & S Bridge, Willamette R., Oregon	12-0				X	WK
Multnomah Channel, Oregon	13-0				X	WK
St. Helens, C.R., Oregon	20-W			X		Q
Columbia City, C.R., Oregon	47-F	X				SM
N. Kalama, C.R., Washington	21-W			X		Q
Kalama, Kalama R., Washington	22-W			X		Q
Kelso, Coweman R., Washington	23-W			X		M
Kosmos, Cowlitz R., Washington	24-W			X		M
Longview, C.R., Washington	25-W			X		Q
Clatskanie, C.R., Oregon	48-F	X				SM
Cathlamet, C.R., Washington	'26-W			X		Q
Astoria, C.R., Oregon	49-F	X				SM

* Short-term planning data

** See Map "FWPCA-State Water Quality Monitoring Network".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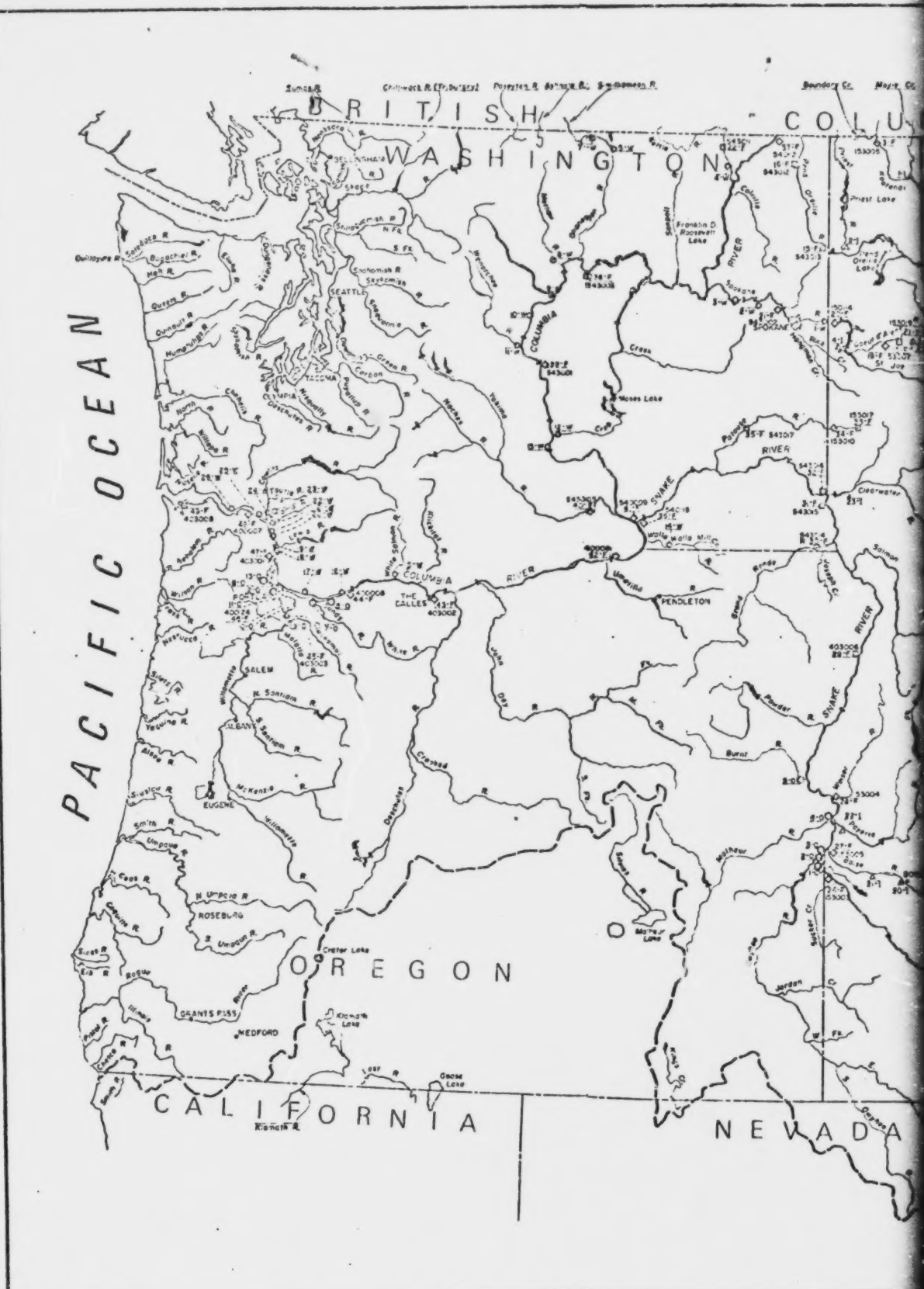
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THE DALLES
PENDLETON
COLUMBIA
RIVER
SNAKE
Crater Lake
Klamath Lake
Goose Lake
Priest Lake
Moses Lake
Burns

COLUMBIA
MONTANA
NEVADA
UTAH
IDAHO
FWPCA-STATE
WATER QUALITY MONITORING NETWORK
Fiscal Year 1969-1970
FWPCA STATIONS Numbers 1-F to 49-F
Active 1968
To be activated 1969
00000000 STORET Code numbers
STATE STATIONS
IDAHO 1-W to 23-W
OREGON 1-O to 13-O
WASHINGTON 1-W to 26-W
COLUMBIA PACIFIC
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pollution control agency in the Northwest Region having cooperative arrangements with the USGS on water quality data collection. About seventeen chemical, sanitary and biologic stations in Washington are operated under this joint arrangement.

FWPCA Coordination with the Geological Survey was initiated in November, 1968 by discussions dealing with policy guidelines outlined in the July 18, 1968, memorandum to the Under Secretary of the Interior from the Director, USGS and the Commissioner, FWPCA. No action with respect to contract or other arrangements on station operation, laboratory controls or data handling, however, has taken place to date. Negotiations with the USGS on these and other matters are expected to be initiated sometime in FY 1970.

For the past several months FWPCA personnel have participated in an interagency work group assigned to the development of a telemetering system for hydrologic, meteorlogic and other water resources management data (Hydromet System). A commitment to participate in temperature sensing, beginning in about 1971, has been made.

IV. Long-Term Water Quality Stations Operation in FY 1969 and Later

Table II lists the sampling sites, parameters, frequencies, and year in which each FWPCA station has been or is currently being planned for activation. State agency monitoring plans

and station listings are shown in Appendix II. Parameters and sampling frequencies for state stations included in the FWPCA-State network (Table II) are currently being negotiated. Montana has no plans for long-term monitoring at the present time. The FWPCA estuarine network as projected for initiation in FY 1971 is identified in Appendix III and the FWPCA River Temperature Reporting Network program is shown in Appendix IV. At the end of the RTRN development period (FY 1970) a determination will be made as to which stations will be retained for long-term monitoring. It is expected, after this determination is made, that the USGS will be called upon to operate the stations.

V. Quality Control Considerations

The analytical quality control program for the Northwest Region is coordinated by the Chief of the Portland-Corvallis Consolidated Laboratory. FWPCA Official Interim Methods for Chemical Analysis of Surface Waters, dated September, 1968, and the latest sampling and preservation methods will be used. All agencies affiliated with the coordinated system will be encouraged to participate in the analytical quality control programs to assure uniformity and precision of results.

TABLE II

...ATION NUMBER	LOCATION	F.Y. BEGIN OPERATION	FIELD MEAS.	GENERAL ANALYSIS	MICROBIOL.	TRACE METALS	NUTRIENTS	ELECTRONIC MONITOR	OTHER FIELD MEAS.	STREAMFLOW DATA AVAIL.	STREAM GAGING NEEDED		SHEVES LAB NO.
150097	Clearwater River at LEWISTON	60	M	M	M		M					To be suspended '69	457
153015	Clearwater River near SPALDING	69	M	M	M		M			02110		To be suspended '69	510
153004	Snake River near WEISER	68	M	M	M		M			02078			474
*153014	Payette River at PAYETTE	69	Q	Q	Q		Q			02066		To be operated 1 year	497
*153012	Payette River near CASAS	69	Q	Q	Q		Q			02052		To be operated 1 year	495
*153013	N.F. Payette River near Mouth	69	Q	Q	Q		Q			02062		To be operated 1 year	496
153005	Boise River near PARMA	68	M	M	M	M	M			02046			475
*153011	Boise River at BOISE	69	Q	Q	Q		Q			02043		To be operated 1 year	494
153003	Snake River at MARSING	68	M	M	M		M				X		473
153002	Snake River near HAGERTT	68	M	M	M		M						472
153001	Snake River at MILNER DAM	68	M	M	M		M	X		02220			471
153010	Palouse River near PALOUSE	68	M	M	M		M				x		470
153006	Palouse River at POTLATCH	68	M	M	M		M					To be replaced by 153017	476
153017	Palouse River near PRINCETON	69	M	M	M		M				X		525
150114	Spokane River at POST FALLS	60	M	M	M		M			02150			461
153007	Coeur d'Alene River at ROSE LAKE	68	M	M	M	M	M						477
153018	Coeur d'Alene River at CATALDO	69	M	M	M	M	M			02142			526
153019	N.F. Coeur d'Alene River near ENAVILLE	69	M	M	M	M	M			02141			527
150113	Pend Oreille River at ALBENI FALLS DAM	60	M	M	M		M					To be replaced by 543013	460
153008	Kootenai River at PORTHILL	68	M	M	M	M	M			02131			478
153009	Kootenai River at LEONIA	68	M	M	M		M			02120			479
153020	Clark Fork River Blw. Cabinet Gorge	69	M	M	M	M	M						528

* Planning studies for USBR projects

STATION NUMBER	LOCATION	F.Y. BEGIN OPERATION	FIELD MEAS.	GENERAL ANALYSIS	MICROBIOL.	TRACE METALS	NUTRIENTS	ELECTRONIC MONITOR	OTHER FIELD MEAS.	STREAMFLOW DATA AVAIL.	STREAM GAGING NEEDED		SHAVES LAB NO.
293018	Kootenai River blw Lake Cr. nr Troy	69	M	M	M	M	M					To be suspended '69	523
293004	Lake Creek near Troy	68	M	M	M	M	M		1			To be suspended '69	483
293010	Ross Creek nr Troy	68	Q	Q	Q	Q	Q		1			To be suspended '69	490
293001	Kootenai R. at Libby	68	M	M	M		M			03630			480
293008	Bull R. nr Noxon	68	M	M	M	M	M		1			To be suspended '69	488
293009	M.F. Bull R. nr Noxon	68	Q	Q	Q	Q	Q		1			To be suspended '69	489
293002	Clark Fork R. at Plains	68	M	M	M	M	M			03726			481
*293011	Logan Cr. nr Mouth	69	Q	Q	Q		Q					To be operated 1 year	499
*293012	Stillwater R. nr Mouth	69	Q	Q	Q		Q					To be operated 1 year	500
293014	Ashley Cr. blw Kalispell	69	Q	Q	Q		Q						502
293015	Ashley Cr. nr Kila	69	Q	Q	Q		Q						511
*293013	Ashley Cr. nr Marion	69	Q	Q	Q		Q					To be operated 1 year	501
293003	Clark Fork R. nr Alberton	68	M	M	M	M	M				X		482
*293016	Bitterroot R. nr Missoula	69	Q	Q	Q		Q					To be operated 1 year	513
*293017	Bitterroot R. nr Darby	69	Q	Q	Q		Q			03665		To be operated 1 year	512
293005	Clark Fork R. at Missoula	68	M	M	M	M	M			03660			484
293006	Clark Fork R. at Garrison	68	M	M	M	M	M				X		485
293007	Clark Fork R. at Deer Lodge	68	M	M	M	M	M				X		486
293019	Clark Fork R. blw Thompson Falls	69	M	M	M	M	M			03728			529
293020	Flathead R. blw Ashley Cr.	69	M	M	M	M	M						530
293021	Flathead R. at Polson	69	M	M	M	M	M			03710			531
* Planning studies for USBR projects													

STATION NUMBER	LOCATION	F.Y. BEGIN OPERATION	FIELD MEAS.	GENERAL ANALYSIS	MICROBIOL.	TRACE METALS	NUTRIENTS	ELECTRONIC MONITOR	OTHER FIELD MEAS.	STREAMFLOW DATA AVAIL.	STREAM GAGING NEEDED		SHAVES LAB NO.
540009	Columbia R. at Iasco	59	M	M	M	M	M		RD/M	01764			452
540115	Snake R. at Ice Harbor Dam	60	M	M	M		M			01794			462
543005	Yakima R. at Kiona	68	M	M	M	M	M			01756			487
543001	Columbia R. blw Rock Island Dam	68	M	M	M	M	M			01682			467
543003	Columbia R. at Bridgeport	69	M	M	M	M	M			01616			515
543002	Spokane R. blw Nine Mile Dam	68	M	M	M		M			01605			468
543011	Kettle R. at Laurier	69	M	M	M	M	M			01551			516
540112	Columbia R. at Northport	60	M	M	M	M	M		RD/M	01548			459
543012	Pend Oreille R. at Metaline Falls	69	M	M	M	M	M			01547			517
543013	Pend Oreille R. at Newport	69	M	M	M		M			02139			518
543014	Grande Ronde R. at Paradise	69	Q	Q	Q	Q	Q			14571			519
*543010	Grande Ronde R. nr Mouth	69	Q	Q	Q		Q					To be operated 1 year	509
543015	Snake R. at Asotin	69	M	M	M		M			02097			520
543016	Snake R. blw Lewiston	69	M	M	M		M			01768			521
543017	Palouse R. nr Hooper	69	M	M	M		M			01786			522
*543004	Palouse R. at Colfax	69	Q	Q	Q		Q			01780		To be operated 1 year	503
*543006	S.F. Palouse R. abv Colfax	69	Q	Q	Q		Q					To be operated 1 year	504
*543007	S.F. Palouse R. blw Pullman	69	Q	Q	Q		Q			01777		To be operated 1 year	505
*543008	L. Klickitat R. abv Goldendale	69	Q	Q	Q		Q			01822		To be operated 1 year	506
*543009	L. Klickitat R. blw Goldendale	69	Q	Q	Q		Q					To be operated 1 year	507

* Planning studies for USBR projects

STATION NUMBER	LOCATION	F.Y. BEGIN OPERATION	FIELD MEAS.	GENERAL ANALYSIS	MICROBIOL.	TRACE METALS	NUTRIENTS	ELECTRONIC MONITOR	OTHER FIELD MEAS.	STREAMFLOW DATA AVAIL.	STREAM GAGING NEEDED		SHAVES LAB NO.
403008	Columbia R. at Astoria	69	SM	SM	SM		SM				X		514
400007	Columbia R. At Clatskanie	59	SM	SM	SM	SM	SM				X		450
403001	Columbia R. at Columbia City	63	SM	SM	SM		SM				X		465
400008	Columbia R. at Bonneville Dam	59	SM	SM	SM	SM	SM			18282			451
403002	Columbia R. at The Dalles	68	M	M	M	M	M			18281			464
400081	Columbia R. at McNary Dam	60	M	M	M		M			14574			455
403003	Willamette R. blw Oregon City	68	SM	SM	SM		SM	X			X	Monitor used summer only	466
400124	Willamette R. at Portland	61	SM	SM	SM	SM	SM	X			X		463
*403008	White R. nr Tygh Valley	69	Q	Q	Q		Q			14640		To be operated 1 year	503
*403004	Snake R. at Brownlee Dam	69	M	M	M		M					To be suspended 10/69	491
*403005	Snake R. at Oxbow Dam	69	M	M	M		M			02030		To be suspended 10/69	492
403006	Snake R. at Hells Canyon Dam	69	M	M	M		M			02081			493
*403007	Burnt R. nr Huntington	69	Q	Q	Q		Q			14552		To be operated 1 year	408

* Planning studies for USBR projects

KEY TO TABLE

SURVEILLANCE STATIONS ANALYSES AND SAMPLING FREQUENCY

Minimum Frequency

i - Infrequent Irregular Intervals
A - Annual
SA - Semi-Annual
M - Monthly
BM - Bi-monthly
SM - Semi-monthly
Q - Quarterly
C - Continuous Monitor
SM - M - Semi-monthly April through October; Monthly November through March

Fiscal Year (FY)

To be activated during or before fiscal year __.

Electronic Monitor (EM)

Field Measurements (FM)

Water temperature
D. O.
pH
Conductivity

Other Field Measurements

Air temperature
Flow (cfs)
(Both at all stations at time of sampling.)

General Water Analysis (GA)

BOD
COD or TOC
Chlorides
Alkalinity
pH (Lab)
Hardness
Turbidity
Color
Odor

Nutrients (N)

Ammonia Nitrogen
Organic Nitrogen
Nitrate-Nitrite Nitrogen
Total Phosphorus
Soluble Phosphorus

Trace Metals (TM)

Quarterly Composite

Aluminum
Arsenic
Barium
Beryllium
Boron
Cadmium
Chromium
Cobalt
Copper
Iron
Lead
Manganese
Molybdenum
Nickel
Potassium
Selenium
Silver
Strontium
Vanadium
Zinc

Microbiology (M)

Total Coliform
Fecal Coliform

Radiological (RD)

Gross Alpha
Gross Beta
Strontium 90

VI. STORET Use

Automatic data processing capability in the Northwest Region is geared largely to the STORET system. An inter-agency river mile index is available for station coding and a keypunch machine, computer terminal and the necessary data transmission accessories have been installed. State and other Federal agencies are being encouraged to utilize the system.

VII. Data Evaluation Process

Water quality data and standards criteria for interstate streams and associated tributaries will be placed in STORET so that comparisons between the two can be programmed, violations indicated, and results disseminated to appropriate FWPCA, State and other agency personnel. In this regard, a standards flagging program utilizing STORET is currently being developed by Northwest Region personnel. In addition, statistical analysis of base-line quality data will be performed at least annually and results provided at that time. Evaluations will include water quality trends; determination of the adequacy of standards criteria, and needs to revise station locations, parameter coverage and sampling frequencies.

Data print-outs from STORET are currently supplied to many agencies and individuals both routinely and upon request.

The USGS Data Center in Portland routinely publish FWPCA data collected at several existing long-term data stations. Additional arrangements with the USGS on data reporting will be made as appropriate.

APPENDIX I

DATA NEEDS

RIVER BASIN STUDIES BRANCH

UNITED STATES
DEPARTMENT OF THE INTERIOR
FEDERAL WATER POLLUTION CONTROL ADMINISTRATION
NORTHWEST REGION

REPLY TO ADDRESS:
REGIONAL OFFICE
ROOM 411 PITTOCK BLOCK
PORTLAND, OREGON 97205

MEMORANDUM December 23, 1968

TO: W. E. Eldridge

FROM: L. A. Reed

SUBJECT: Stream Sampling Needs, River Basin Studies Branch

Attached are tabulations and material relating to sampling needs developed by the basin engineers on my staff. They have attempted, considering the time available and knowledge of the areas, to present as realistic a picture of needs as possible.

In our discussions with the surveillance personnel from Corvallis, it was emphasized that they presently have no capacity to run long-term stream BODs in the field on a regular basis. Accordingly, we also have a definite need for short-term surveys of one to two weeks in duration for most stream reaches indicated. These surveys, hopefully performed quarterly, would do a great deal to plug data gaps which now exist. As you are well aware, absence of BOD data has greatly reduced our ability to realistically analyze the relationship between treatment and streamflow requirements. We envision that these surveys can be cooperatively planned and conducted by the Surveillance and River Basin Studies staffs.

I am well aware that you may need classification or indications of priorities on some of these desired sampling locations. Please feel free to work directly with the individual engineers.

cc: Basin Engineers

Attachments

Snake Basin Water Quality Monitoring Sites

No.	Data Needs	Location	River Mile	Associated Water Resource Project
1	1, 2	Snake River below Palisades	888	Lynn Crandall
2	1, 2	Snake River above Henrys Fork	844.9	" "
3	1, 2	Henrys Fork below St. Anthony	32	Lower Teton
4	1, 2	Teton River at Teton Dam Site	28.4	" "
5	1, 2	Henrys Fork at mouth	1	" "
6	1, 2	Snake River below Blackfoot	751	Lynn Crandall
7	1, 2	Portneuf River at mouth	1	Marsh Creek, Lynn Crandall
8	1, 2	American Falls Reservoir	720±	Lynn Crandall
9	1, 2	Snake River below American Falls	713	" "
10	1	Milner Reservoir near Milner Dam	640	" "
11	1, 2	Snake River at King Hill	545.6	Upper Snake Project
12	1, 2	Jordan Creek at Jordan Valley Dam Site	55.3	Jordan Valley Project
13	1, 2	Boise River below Lucky Peak Dam	63	SW Idaho Development Project
14	1, 2	Boise River at Caldwell	22	" " " "
15	1	Boise River at mouth	1	" " " "
16	1	N.F. Payette above Banks	2	" " " " , Garden Valley Division
17	1, 2	S.F. Payette near Banks	72.4	Garden Valley Division
18	1, 2	Payette River near mouth	1	" " "
19	1, 2	Weiser River near mouth.	1	SW Idaho Development Project
20	1, 2	Burnt River above Huntington	2.5	Burnt River Project
21	1, 2	Snake River at Appaloosa Dam Site	197.6	Middle Snake Development
22	1, 2	Grande Ronde River near mouth	1	Grande Ronde Basin
23	1	Snake River above Asotin	145	Middle Snake Development
24	1	Snake River at Wawawai	110.7	" " "
25	1, 2	N.F. Palouse at Stateline	123.4	Palouse Basin
26	1, 2	S.F. Palouse at Bridge below STP	21.2	" "
27	1, 2	S.F. Palouse at confluence w/N.F.	0.1	" "
28	1, 2	N.F. Palouse at Colfax	90	" "
29	1	Snake River at mouth	1	Middle Snake Development

Desired Sampling Stations
Puget Sound - Washington Coast

Desired Stations	Storet Code No.	River Mile	Frequency
Nooksack R. at Deming			M
Fistrap Creek below Lynden			M
Nooksack R. at Ferndale	541032	6.0	M
Sumas R. near Sumas	Select 1		M
Drayton Harbor South of entrance	Select 1		M
Birch Bay	Select 1		M
Bellingham Bay (Class B)	Select 2		W
Inner Bellingham Bay (Class C)	Select 2		W
Bellingham Bay (Class A)	Select 2		Q
Lake Whatcom near Bellingham	541112		M
Lake Samish	Select 1		M
Samish R. near Allen	541034 1/		M
Skagit R. near Marblemount	541038		M
Skagit R. below Lyman	Select 1		M
Skagit R. near Mt. Vernon	541035		M
Sauk R. near Darrington	541037		M
Guemes Channel near Anacortes	Select 1		M
Fidalgo Bay near Anacortes	Select 2		M
Oak Harbor	Select 1		M
N.F. Stillaguamish R. near Arlington	541040		M
N.F. Stillaguamish R. below Granite Falls	541041 2/	32.7	M
Stillaguamish R. near Silvana	541039	11.1	M
Port Susan	Select 1		Q
Skykomish R. at Gold Bar	541046	42.9	M
Sultan R. at Sultan	541045	33.6 - 0.1	M
Snoqualmie R. at Snoqualmie	541044	19.8 - 42.5	M
Tolt R. at Carnation	541043	19.8 - 25.1 - 0.6	M
Snohomish R. at Snohomish	541042	12.9	M
Pilchuck R. at Snohomish	Select 1		M
Port Gardner (Class B)	Select 3		M
Inner Everett Harbor - (Class C)	Select 3		M
Snohomish R. at Hwy. 99 Bridge			M
Snohomish R. at Hwy. 2 Bridge			M

1/ Existing station is near Burlington.
2/ " " " at Granite Falls.

Desired Stations	Storet Code No.	River Mile	Frequency
Lake Washington Ship Canal	541111	1.0	M
Cedar R. at Renton (Maplewood)	541047[1/]		M
Cedar R. near Landsburg	541048	22.0	M
Sammamish R. below Bothell	541049[2/]		M
Issaquah Cr. near Issaquah	541050		M
Lake Sammamish near Issaquah			M
Lake Sammamish near Redmond			M
South Lake Washington			M
Mid Lake Washington			M
North Lake Washington			M
Duwamish R. at Tukwila		9.2	M
Duwamish R. at Spokane St., Seattle			M
Duwamish R. at Hwy. 509			M
Green R. at Auburn	541052	33.9	M
Big Soos Cr. near Auburn	541053		M
Green R. near Palmer	541110	60.2	M
Elliott Bay	Select 5		M
Puget Sound - West Point			Q
Puget Sound - Alki Point			Q
Puget Sound near Des Moines			Q
Puyallup R. at Puyallup	541054	5.5	M
Puyallup R. near Orting	541058	21.5	M
Puyallup R. near Fife			M
Puyallup R. below STP Hwy. 509 (11th St.)			M
Carbon R. near Orting, Hwy. 162	541057		M
White R. near Sumner	541055	9.6 - 4.6	M
White R. near Auburn, St. Hwy. 5	541056	9.6 - 6.0	M
White R. near Buckley			
Boise Cr. at Buckley	541109		M
Boise Cr. near Enumclaw	541108	9.6 - 21.1 - 6.5	M
Newaukum Cr. near Enumclaw			M
Lake Tapps	Select 1		Q
Mud Mountain Dam			M
Commencement Bay (Class A)	Select 3		Q
Commencement Bay (Class B)	Select 4		M
Commencement Bay (Class C)	Select 2		M
Chambers Cr. near Steilacoom	541059	0.9	M
Chambers Cr. near Mouth - below W. Tacoma			M
Leach Cr. near Steilacoom	541060	3.2 - 0.3	M

1/ Existing station at St. Hwy. 5 -- St. Hwy. 5 does not go near Cedar R.

2/ " " is at Bothell -- may be okay.

Desired Stations	Storet Code No.	River Mile	Frequency
Clett Cr. at Tacoma	541061	3.3 - .8	M
Chambers Cr. below Steilacoom Lake	541062	4.8	M
Clover Cr. above Steilacoom Lake	541063	12.8 - 7.1	M
Clover Cr. near Parkland	541064	12.8 - 15.8	M
American Lake	Select 1		M
Puget Sound near Ft. Lewis			Q
Nisqually R. at McKenna	541065	20.6 - 22.0	M
Nisqually R. at Alder Dam			M
Deschutes R. at Tumwater	541066		M
Deschutes R. at Rainier	541067		M
Budd Inlet	Select 2		M
Henderson Inlet	Select 1		Q
Eld Inlet	Select 1		Q
Totten Inlet	Select 1		Q
Goldsborough Cr. at Shelton	541068		M
Oakland Bay at Shelton	Select 1		Q
Chico Cr. near Bremerton	541107		M
Sinclair Inlet	Select 2		Q
Dyes Inlet	Select 1		Q
Port Orchard	Select 1		Q
Skokomish R. near Potlatch	541074	5.5	M
Hamma Hamma R. near Eldon	541072	0.1	M
Duckabush R. near Duckabush	541071 1/		M
Dosewallips R. at Brinnon	541069		M
Big Quilcene R. near Quilcene	541070		M
Admiralty Inlet near Port Townsend	Select 2		Q
Dungeness R. near Sequim	541075	6.9	M
Elwha R. near Port Angeles	541076	8.1	M
Port Angeles	Select 6		M
Calawah R. near Forks			Q
Humptulips R. (lower)			Q
Grays Harbor	Select 1		M
Chehalis R. below Montesano			M
Willapa R. below South Bend	Select 1		M

1/ Station listed as near Brinnon - Duckabush R. does not go near Brinnon.

Lower Columbia Basin

List of basins where water quality information desired for basin studies.

Primary basis is need for studies for federal construction agency projects. Secondary need is data for basins where water quality problems are developing and an appraisal of problem may be called for. Considerations exclusive of existing surveillance stations.

Basin	Reach	Problems, Considerations	Study Purpose 1/
Tualatin	Forest Grove to mouth	Mun/Ind waste loadings, low flows	a, b, c
Deschutes	Headwaters to Warm Springs	Irrig. return flows, low flows, algae	a, b, c
Umatilla	Pendleton to mouth	Mun/Ind loads, low flows, irrig.	a, b, c
Walla Walla	Walla Walla to mouth	Mun/Ind loads, irrig. low flows	a, b, c
Rogue	Headwaters to Grants Pass	Mun/Ind loads, irrig. temp., low flows, Bear Creek	a, b, c
Long Tom	Noti to mouth	Algae, temp., land runoff	a, b, c
White and Hood	basin	2/	c
Calapooia	Dollar - mouth	Temp., turb.	a, b, c
Willamette	Eugene - mouth	Temp., DO in harbor, PBI, bact.	a
Yamhill	basin	Bact., temp., turbidity	a, b, c
Luckiamute	basin	Temp., turb.	a, b, c
Molalla	Molalla to mouth	Bact., temp.	a, b, c
White Salmon	basin		c
South Umpqua	Tiller - Umpqua		c
South Santiam	basin	Temp., DO, turb.	a, b, c
Alsea, Coos	basins	Sediment load, temp.	c
Illinois (Rogue)	basin		a, b, c
Little Klickitat	Goldendale	DO, temp., low flows, Mun/Ind discharge	a, b, c

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1/ a- Need for low flows
b- Reservoir water quality analysis
c- Water quality impacts

2/ Detailed information not known.

APPENDIX II

STATE AGENCY PROGRAMS

WATER POLLUTION CONTROL COMMISSION

SURVEILLANCE PROGRAM

One of the basic goals of the Washington State Water Pollution Control Commission is to provide comprehensive monitoring and surveillance of all State waters and waste discharges influencing water quality in order to determine compliance with prescribed standards and to evaluate trends in water quality.

In order to accomplish this basic goal, programs are in progress which provide for the collection of background information for water quality trend analysis and to measure compliance with water quality standards, monitoring and inspection of industrial effluents and facilities to determine compliance with waste discharge permit conditions, monitoring and inspection of municipal treatment facilities and waste discharges, special studies in known problem areas to aid in the control of specific waste sources, and studies and investigations to solve special pollution problems.

PRESENT PROGRAM

The present surveillance and water quality monitoring system of the Washington State Water Pollution Control Commission involves an extensive surface water program which includes a Basic Data network operated in cooperation with the Washington State Department of Conservation and the U. S. Geological Survey. This program has been in progress since July 1959. A list of stations sampling frequency, distribution and a sample data sheet showing the specific analyses performed are included in Appendix I.

A sampling program was also established on forty (40) selected Washington Lakes in the fall of 1963 to monitor the effects of urban development and the increased use of lakes for recreational purposes. The parameters measured are temperature, dissolved oxygen, pH, turbidity, transparency (secchi disc) and conductivity. Notes are made regarding the general aesthetics of the lake, the type and extent of development and the type of ground cover. A listing of the lakes sampled are included in Appendix I. These lakes will be monitored in the spring, midsummer and fall.

A routine Puget Sound, estuarial and marine coastal water monitoring system was established in 1967 in accordance with the "Water Quality Standards for Interstate and Coastal Waters of the State of Washington." A list of station locations, sampling frequency, distribution and sample data sheet showing the information obtained is included in Appendix II.

In addition to the routine surface water, marine water and lake surveillance program, samples are collected periodically from 250 sewage treatment facilities, 150 industries and 25 radiological stations. Approximately 1,700 on-the-spot inspections are made annually to determine permit compliance, note any physical problems which may be apparent and to provide technical assistance to managers and operators of industrial and municipal treatment facilities. Special in-plant studies are made to determine waste stream loadings on an as needed basis and approximately 300 complaints and emergency water quality situations are investigated annually.

Special Studies

Special short-term water quality studies are conducted on an as needed basis to provide solutions to specific pollutional problems and to provide background water quality data in selected areas where it is anticipated problems may develop, such as new major industrial sites.

WASHINGTON WATER POLLUTION CONTROL COMMISSION

SURFACE WATER

BASIC DATA STATION LISTING

Following is a Basic Data Station listing those stations being sampled by WWPCC.

WWPCC #	Description	Freq.	GS Number
1	Deschutes R nr Olympia Wash	M	12080000
2 *	Nisqually R at McKenna Wash	M	12089500
3	Chambers C nr Steilacoom Wash	M	12091500
4 *	Puyallup R at Puyallup Wash	M	12101500
R 4A	Puyallup R nr Orting Wash	Q	12093500
R 4B	White R nr Sumner Wash	Q	12100500
5	Big Soos C ab Hatchery nr Auburn	M	12112600
6	Green R nr Auburn Wash	M	12113000
7	Green R at Tukwila Wash	M	12113350
8	Cedar R at Renton Wash	M	12119000
R 8A	Issaquah Cr nr Mouth nr Issaquah Wash	Q	12121600
9	Sammamish R at Bothell Wash	M	12126500
10 *	Snohomish R at Snohomish Wash	M	12155500
11	Stillaguamish R nr Silvana Wash	M	12167700
12 *	Skagit R nr Mt Vernon Wash	M	12200500
13	Samish R nr Burlington Wash	M	12201500
14 *	Whatcom Lake nr Bellingham Wash	M	12202500
15	Nooksack R at Ferndale Wash	M	12213100
R15A*	Nooksack R at Deming Wash	Q	12210500
R15B	Skagit R at Marblemount Wash	Q	12181000
R15C	NF Stillaguamish R nr Arlington Wash	Q	12167000
R15D*	Tolt R at Carnation Wash	Q	12148500
R15E	Snoqualmie R at Snoqualmie Wash	Q	12144400
R15F*	Yakima R at Cle Elum Wash	Q	12479500
B15A*	Sultan R at Sultan Wash	Q	12138200
B15B	Skykomish R nr Gold Bar Wash	Q	12134500
B15C	Wenatchee R nr Leavenworth Wash	Q	12457800
Y15A	Similkameen R nr Nighthawk Wash	Q	12442500
Y15B	Okanogan R at Oroville Wash	Q	12439500
Y15C*	Okanogan R nr Malott Wash	Q	12447300
Y15D	Methow R nr Pateros Wash	Q	12449950
Y15E	Chelan R at Chelan Wash	Q	12452500
Y15F	Entiat R nr Entiat Wash	Q	12453000
Y15G*	Wenatchee R at Wenatchee Wash	Q	12462520
16	Crab C nr Beverly Wash	M	12472600
17	Wilson Cr at Thrall Wash	M	12484000
18	Yakima R at Umatanum Wash	M	12484900
19 *	Naches R nr Yakima Wash	M	12498700
20	Yakima R nr Parker Wash	M	12505000
21	Yakima R at Kiona Wash	M	12510500
22 *	Snake R bl Ice Harbor Dam Wash	M	13353000
23 *	Walla Walla R nr Touchet Wash	M	14018500
24 *	Columbia R at McNary Dam Wash	M	14019200
25 *	Klickitat R nr Pitt Wash	M	14113000
26	White Salmon R nr Underwood Wash	M	14123500
27	Washougal R nr Washougal Wash	M	14143500
28 *	Lewis R at Woodland Wash	M	14221700

WWPCC #	Description	Freq.	GS Number
B28A	Kalama R bl Italian Cr nr Kalama Wash	Q	14223500
29	Coweman R nr Kelso Wash	M	14245000
B29A*	Toutle R nr Castle Rock Wash	Q	14242700
30 *	Naselle R nr Naselle Wash	M	12010000
31	Willapa R nr Willapa Wash	M	12013500
B31A	Chehalis R nr Doty Wash	Q	12020000
B31B	Newaukum R nr Chehalis Wash	Q	12025000
32 *	Wishkah R nr Wishkah Wash	M	12038100
33	Wynoochee R nr Montesano Wash	M	12037400
34 *	Satsop R nr Satsop Wash	M	12035000
35	Chehalis R at Porter Wash	M	12031000

The following stations are being sampled by Mr. Arthur Reisdorph of Spokane on a contract basis for WWPCC.

36 **	Pend Oreille R at Newport Wash	M	12395500
Y37 *	Columbia R at International Boundary	Q	12399500
Y38	Kettle R nr Barstow Wash	Q	12404900
Y39	Colville R at Kettle Falls Wash	Q	12409000
40 *	Spokane R nr Otis Orchards Wash	M	12419500
41	Spokane R at 7 Mi Br Wash	M	12425000
Y42	Little Spokane R at Dartford Wash	Q	12431000
43 **	Spokane R at Long Lake Wash	M	12433000
Y44 *	Snake R ab Clearwater R At Clarkston W	Q	13335300
Y45	Palouse R at Hooper Wash	Q	13351000

The following stations are sampled by U.S.G.S.

50	WF Hoquiam R nr Hoquiam Wash	SA	12038500
51	Humptulips R nr Humptulips Wash	SA	12039000
52	Quinault R at Quinault Lake Wash	SA	12039500
53	Queets R at Queets Wash	SA	12040600
54	Hoh R at US Hwy 101 nr Forks Wash	SA	12041200
55	Solduck R ab Kugel Cr nr Fairholm Wash	SA	12042000
56	Elwha R nr Port Angeles Wash	SA	12045500
57	Dungeness R nr Sequim Wash	SA	12048000
58	Big Quilcene R nr Quilcene Wash	SA	12052300
59	Dosewallips R at Brinnon Wash	SA	12053500
60	Duckabush R at US 101 Br nr Brinnon Wash	SA	12054100
61	Hamma Hamma R at Eldon Wash	SA	12055000
62	Skokomish R nr Potlatch Wash	SA	12061500
63	Chico Cr nr Bremerton Wash	M	12072000
64	Goldsborough Cr nr Shelton Wash	SA	12077000
65	Cowlitz R bl Kosmos Wash	M	14233500
66	Columbia R at Fisher Island nr Longview	M	14245400

* Radiological Station
Radiological Station sampled Bi-monthly

WASHINGTON STATE WATER POLLUTION CONTROL COMMISSION

POLLUTION SURVEILLANCE - COASTAL AND INTERSTATE WATERS

Area Code	Station Locations	Freq.	Longitude	Latitude	Description
(Admiralty Inlet)					
ADM	001	M	122° 37' 00"	48° 01' 48"	Admiralty Inlet, south end of Whidbey Island
(Bellingham Bay)					
BLL	001	M	122° 29' 05"	48° 45' 05"	Whatcom Waterway
	002	M	122° 29' 10"	48° 45' 04"	Whatcom Waterway, Standard Oil Dock
	003	M	122° 29' 38"	48° 44' 43"	Whatcom Waterway, south end near east pier.
	004	M	122° 30' 25"	48° 45' 10"	Yacht Harbor, 100 yds. south FL 4 sec. light #2
	005	M	122° 30' 35"	48° 44' 22"	800 yds. NW Nun #4 on Starr rock
	006	M	122° 30' 08"	48° 44' 05"	Adjacent to Nun Buoy #4
	007	M	122° 30' 45"	48° 43' 21"	500 yds. NW of South Bellingham Piers
	008	M	122° 31' 47"	48° 42' 50"	Adjacent Red buoy #2 Fl 4 sec. and bell
	009	M	122° 35' 54"	48° 41' 10"	Adjacent QK Fl Red Buoy #2 south of Frances Point
	010	M	122° 34' 40"	48° 38' 20"	500 yds. South Eliza Rock
(Budd Inlet)					
BUD	001	Q	122° 54' 20"	47° 02' 52"	Budd Inlet, Yacht Basin off center of most seaward pier.
	002	Q	122° 54' 18"	47° 03' 06"	South end of Olympia Port Dock
	003	Q	122° 54' 22"	47° 03' 35"	Channel side spar buoy #10.
	004	Q	122° 54' 28"	47° 03' 58"	Channel side light buoy #6.
	005	Q	122° 55' 01"	47° 05' 32"	Olympia Shoals, south side Fl red Lt. at Horn.
(Commencement Bay)					
CMB	001	M	122° 30' 19"	47° 18' 15"	Tacoma Yacht Club
	002	M	122° 26' 39"	47° 18' 21"	Browns Point
	003	M	122° 26' 56"	47° 17' 26"	Middle Bay
	004	M	122° 28' 30"	47° 16' 59"	Old Tacoma
	005	M	122° 26' 45"	47° 16' 10"	Mouth of City Waterway
	006	M	122° 26' 10"	47° 15' 42"	Mouth of City Waterway
	007	M	122° 25' 53"	47° 14' 55"	City Waterway
	008	M	122° 25' 46"	47° 15' 53"	St. Paul Waterway
	009	M	122° 25' 58"	47° 16' 31"	Puyallup Waterway
	010	M	122° 25' 36"	47° 16' 11"	Puyallup Waterway

Area Code	Station Locations	Datum	Longitude	Latitude	Description
Commencement Bay, continued)					
	011	M	122° 25' 02"	47° 15' 36"	Puyallup River
	012	M	122° 23' 55"	47° 14' 27"	Puyallup Waterway and River
	013	M	122° 24' 50"	47° 16' 43"	Port Industrial Waterway
	014	M	122° 23' 44"	47° 16' 02"	Port Industrial Waterway
	015	M	122° 24' 46"	47° 17' 13"	Hylebos Waterway
	016	M	122° 23' 35"	47° 16' 39"	Hylebos Waterway
	017	M	122° 22' 47"	47° 16' 26"	Hylebos Waterway
(Columbia River)					
COL	010	Q	125° 25' 30"	46° 13' 45"	Cathlamet
	015	Q	123° 03' 21"	45° 59' 20"	5 miles NW of Longview
	020	Q	122° 51' 20"	46° 00' 56"	Kalama, north end of Sandy Island
	025	Q	122° 48' 22"	45° 54' 15"	St. Helens, Midchannel 1 mile north Columbia City
	030	Q	122° 45' 51"	45° 40' 04"	Willamette River, 100 yds west of Fl 4 Sec #39
	031	Q	122° 45' 06"	45° 39' 55"	100 yds east of Fl red 4 Sec #40
	035	Q	121° 57' 43"	45° 37' 57"	Bonneville, below Dam
	040	Q	121° 08' 38"	45° 36' 33"	The Dalles Dam
	045	Q	119° 19' 24"	45° 55' 53"	McNary Dam
	050	Q	119° 01' 51"	46° 12' 26"	Pasco
	055	Q			Richland
	060	Q			Priest Rapids Dam
	065	Q			Bridgeport
	070	Q			Brewster, upriver 1/2 mi. above Okanogan
	075	Q			Brewster, 1/4 mi. below bridge in Okanogan
	080	Q	118° 06' 42"	48° 40' 44"	Kettle River at confluence with Columbia River
	085	Q	117° 47' 45"	48° 55' 00"	Northport, 1/2 mi. below bridge below Northport
(Carr Inlet)					
CRR	001	Q	122° 42' 30"	47° 16' 36"	Carr Inlet, special buoy midchannel
(Case Inlet)					
CSE	001	Q	122° 50' 35"	47° 15' 53"	Case Inlet, 100 yds. SW Herron Island
(Drayton Harbor)					
DRA	001	M	122° 45' 42"	48° 58' 02"	Drayton Harbor, SE of tank 1000 yds

Area Code	Station Locations	Freq.	Longitude	Latitude	Description
(Dyes Inlet)					
DYE	001	Q	122° 40' 51"	47° 35' 28"	Dyes Inlet, Ostrich Bay, midchannel east of Elwood
	002	Q	122° 40' 54"	47° 38' 06"	WNW Windy Point
	003	Q	122° 38' 59"	47° 35' 14"	Washington Narrows, channel side of black can buoy #1
(Elliott Bay)					
ELB	001	Q	122° 22' 32"	47° 37' 34"	Elliott Bay, due east of Pier 91
	002	Q	122° 20' 58"	47° 36' 40"	Standing 50 yds. off middle of Pier 66
	003	Q	122° 20' 22"	47° 36' 07"	100 yds. off end of Pier 51
	004	Q	122° 20' 35"	47° 35' 23"	Mouth of east Waterway in front of and between berth 4 & 5 and FL 10 Sec. Lt.
	005	Q	122° 21' 07"	47° 35' 21"	100 yds. off end of Pier 15
	006	Q	122° 21' 32"	47° 35' 25"	Mouth of West Waterway midchannel 200 yds. from end of Pier 13
	007	Q	122° 22' 35"	47° 35' 26"	Mouth of West Waterway NE Seacrest Marina, south of Duwamish Hd.
	008	Q	122° 23' 10"	47° 36' 03"	West of West Waterway, in line with Duwamish Hd. & Pier 91
	009	Q	122° 21' 10"	47° 34' 17"	Duwamish Waterway beneath Spokane Street bridge
	010	Q	122° 18' 47"	47° 31' 15"	Seattle, 16th Street bridge
	011	Q	122° 17' 34	47° 30' 42"	Seattle, Oxbow bridge
	012	Q	122° 17' 20"	47° 30' 03"	Seattle, E. Marginal Way bridge
	013	Q	122° 15' 06"	47° 28' 03"	Seattle, Tukwila, Village Green apts.
	014	Q	122° 14' 54"	47° 27' 50"	Tukwila, Interurban Ave. bridge
(Eld Inlet)					
ELD	001	Q	122° 56' 55"	47° 06' 23"	Eld Inlet, 500 yds. east of Flapjack Point
(Strait of Georgia)					
GRG	001	M	122° 47' 48"	48° 53' 42"	South end Birch Bay
(Grays Harbor)					
GYS	002	M	123° 42' 07"	46° 57' 18"	Chehalis River
	003	M	123° 45' 55"	46° 57' 28"	Cosmopolis Boat ramp
	004	M	123° 47' 00"	46° 58' 41"	Chehalis River, 200 yds. south of Standard Oil pier
	005	M	123° 48' 28"	46° 58' 17"	Chehalis River, west of railroad bridge, midchannel
	006	M	123° 50' 32"	46° 57' 26"	East end of Rennie Is. (Charley Cr.)

Area Code	Station Locations	Freq.	Longitude	Latitude	Description
(Grays Harbor - continued)					
	007	M	123° 52' 15"	46° 58' 05"	North Channel
	008	M	123° 54' 43"	46° 56' 15"	South Channel
	009	M	123° 56' 54"	46° 57' 53"	North Channel
	010	M	124° 01' 41"	46° 55' 42"	Cross over
	011	M	124° 04' 37"	46° 58' 42"	North Bay (Goose Island)
	012	M	124° 06' 45"	46° 55' 02"	Westport
	013	M	124° 13' 40"	46° 54' 40"	Coastal water off Grays Harbor
(Hammersley Inlet)					
HAM	001	Q	122° 59' 18"	47° 11' 57"	Hammersley Inlet
(Hood Canal)					
HCB	001	Q	122° 40' 53"	47° 49' 50"	Hood Canal, south point
	002	Q	122° 50' 50"	47° 44' 47"	Dabob Bay
	003	Q	123° 00' 30"	47° 32' 17"	City of Eldon
	004	Q	123° 01' 25"	47° 21' 23"	Sisters Point
	005	Q	122° 34' 27"	47° 51' 17"	Port Gamble
(Holmes Harbor)					
HLM	001	M	122° 31' 55"	48° 03' 50"	Holmes Harbor, Honeymoon Bay
(Haro Strait)					
HRO	001	M	123° 02' 24"	48° 44' 03"	Skipjack Island, north of Waldron Island
(Strait of Juan de Fuca)					
JDF	001	M	124° 36' 48"	48° 22' 06"	Neah Bay, 100 ft. from end of Pier (Bay Fish Company)
	002	M	124° 34' 36"	48° 22' 36"	Adjacent to Fl white light # 1, Black bell
	003	M	124° 17' 30"	48° 10' 36"	Sekiu, 100 yds. on strait side from breakwater in Sekiu
	004	M	123° 23' 48"	48° 08' 54"	Port Angeles
	005	M	123° 01' 47"	48° 03' 40"	Sequim Bay
	006	M	122° 52' 00"	48° 03' 55"	Port Discovery Bay
(Narrows)					
NRR	001	M	122° 32' 55"	47° 19' 00"	Narrows, west of Point Defiance

Area Code	Station Locations	Freq.	Longitude	Latitude	Description
(Nisqually)					
NSQ	001	Q	122° 41' 50"	47° 06' 45"	Nisqually Reach
(Oakland Bay)					
OAK	001	Q	123° 04' 49"	47° 12' 28"	150 yds. north of stack at Engle Point
	002	Q	123° 04' 54"	47° 12' 42"	Center of Bay on north side of existing piles
	003	Q	123° 05' 00"	47° 12' 52"	Water end of east pier in Yacht Basin
	004	Q	123° 04' 35"	47° 12' 49"	Midway between Engle Point and Shell Oil tanks
(Port Angeles Harbor)					
PAH	001	M	123° 23' 56"	48° 08' 22"	Ediz Hook
	002	M	123° 25' 28"	48° 08' 25"	Ediz Hook - pilot station
	003	M	123° 27' 34"	48° 08' 06"	Head of Ediz Hook
	004	M	123° 27' 22"	48° 07' 49"	Fibreboard Mill
	005	M	123° 25' 42"	48° 07' 22"	Port Angeles Ferry Landing
	006	M	123° 24' 28"	48° 07' 23"	Rayonier Mill
	007	M	123° 24' 17"	47° 07' 10"	Rayonier Mill pier
	008	M	123° 21' 00"	47° 07' 18"	Morse Creek, east of Port Angeles
(Padilla Bay)					
PAD	001	M	122° 33' 30"	48° 30' 52"	South of Hat Island
	002	M	122° 35' 40"	48° 30' 42"	Capsante Head adjacent to Red buoy #2
(Pickering Passage)					
PCK	001	Q	122° 55' 25"	47° 14' 55"	Pickering Passage
(Port Orchard)					
POD	001	Q	122° 33' 58"	47° 35' 21"	Point White
	002	Q	122° 35' 37"	47° 39' 48"	Battle Point
	003	Q	122° 33' 05"	47° 42' 44"	Auto bridge at Agate Passage
	004	Q	122° 38' 44"	47° 43' 48"	Port of Poulsbo
(Puget Sound)					
PSB	001	M	122° 22' 10"	47° 23' 18"	Maury Island, Point Robinson
	002	Q	122° 25' 24"	47° 34' 36"	Between Alki Point & Restoration Point
	003	Q	122° 26' 30"	47° 39' 36"	West Point, north of Elliott Bay
	004	Q	122° 23' 12"	47° 49' 00"	Ferry slip north of Edmonds

Area Code	Station Locations	Freq.	Longitude	Latitude	Description
(Possession Sound)					
PSS	001	M	122° 21' 05"	48° 03' 00"	Camino Head
	002	M	122° 17' 30"	48° 03' 15"	Tulalip Bay
	003	M	122° 18' 00"	48° 00' 30"	Gedney Island
	004	M	122° 18' 30"	47° 57' 00"	Mukilteo Point
	005	M	122° 13' 38"	47° 58' 35"	Weyerhaeuser Dock
	006	M	122° 13' 24"	47° 58' 48"	Pier #1
	007	M	122° 13' 20"	47° 58' 50"	Pier #2
	008	M	122° 13' 20"	47° 58' 54"	Pier #3
	009	M	122° 13' 10"	47° 59' 05"	Scott Paper Company Dock
	010	M	122° 13' 07"	47° 59' 15"	Naval Reserve Dock
	011	M	122° 13' 40"	47° 59' 06"	River mouth point
	012	M	122° 13' 43"	47° 59' 17"	Snohomish River, Fl Green 4 sec. Lt. #5
	013	M	122° 13' 23"	48° 00' 00"	American Pile Driver Company dock
	014	M	122° 12' 00"	48° 01' 13"	Preston Point
	015	M	122° 11' 11"	48° 01' 02"	Highway 99 bridge
	016	M	122° 10' 03"	47° 59' 00"	South tip Smith Island
	017	M	122° 10' 54"	47° 58' 46"	Highway #2 bridge
	018	M	122° 11' 14"	47° 57' 37"	Power line crossing below Lowell
(Port Townsend Harbor)					
PTH	001	M	122° 45' 43"	48° 03' 30"	Port Townsend
	002	M	122° 47' 30"	48° 05' 30"	Port Townsend Harbor
	003	M	122° 46' 06"	48° 06' 24"	Port Townsend Harbor
	004	M	122° 44' 45"	48° 07' 02"	Port Townsend
(Rosario Strait)					
RSR	001	M	122° 39' 45"	48° 31' 18"	Western end of Guemes Channel
	002	M	122° 42' 45"	48° 28' 40"	Burrows Island
	003	M	122° 38' 35"	48° 24' 26"	North end of Whidbey Island
	004	M	122° 44' 12"	48° 39' 48"	Orcas Island
(Sammish Bay)					
SAM	001	M	122° 31' 54"	48° 35' 18"	Just east of Williams Point
	002	M	122° 33' 52"	48° 35' 03"	500 yds. east of Fl 4 Sec. Lt.
(Saratoga Passage)					
SAR	001	M	122° 36' 20"	48° 16' 08"	Crescent Harbor, Forbes Point
(Sinclair Inlet)					
SIN	001	Q	122° 38' 32"	47° 32' 58"	Sinclair Inlet, Bremerton Navy Yard
	002	Q	122° 40' 32"	47° 32' 09"	Sinclair Inlet west, 1 mi. east of Gorst

Area Code	Station Locations	Freq.	Longitude	Latitude	Description
(San Juan Channel)					
SJI	001	M	122° 59' 18"	48° 32' 57"	San Juan Channel between San Juan and Shaw Island
(Skagit Bay)					
SKG	001	M	122° 34' 50"	48° 23' 45"	Hope Island (west)
	002	M	122° 30' 00"	48° 17' 55"	Whidbey Island
(Port Susan)					
SUZ	001	M	122° 22' 10"	48° 08' 07"	Kayak Point
(Totten Inlet)					
TOT	001	Q	122° 57' 48"	47° 09' 52"	Totten Inlet, midchannel south of Windy Point
(Willapa)					
WPA	001	M	123° 44' 55"	46° 41' 15"	Raymond
	002	M	123° 47' 50"	46° 39' 50"	South Bend
	003	M	123° 50' 10"	46° 42' 15"	Range Point
	004	M	123° 58' 20"	46° 41' 13"	Toke Point
	005	M	123° 58' 55"	46° 32' 20"	Nahcotta Channel, east of Oysterville

ESTABLISHED WATER SURVEILLANCE STATIONS

Oregon State Sanitary Authority

November, 1968

PREFACE

The water quality sampling program of the State Sanitary Authority is always in a state of flux so that a listing of this type is tending toward obsolescence the day it is published. However, it is hoped that this list will provide interested persons with information regarding the sampling activities of the Sanitary Authority. In most cases, sufficient information is provided for adequate location of the station to the nearest section. Supplemental data are available for use by the Sanitation and Engineering staff describing the stations in enough detail that anyone who is relatively familiar with an area can drive or walk directly to the sampling point. Every effort is being made to ensure that sampling procedures and points are duplicated on every run. It is anticipated that most of these stations, plus any new ones that appear necessary, will be sampled three times yearly. The plan is to obtain enough data to characterize each stream during low-flow periods, high land runoff periods, and spring runoff when most of the polluting materials have been washed out.

Any corrections, additions, deletions, or general comments will be welcomed by the Sanitary Authority Staff.

NOTE: Some newly established stations do not have full descriptions. Description material will be sent out by memorandum at a later date.

WILLAMETTE RIVER BASIN

I. UPPER MONTHLY WILLAMETTE

IDN No.	Name of Station	Sec., T., R.	River Mile
22-50	Willamette R. @ Springfield Bridge	Sec. 34, T17S, R3W	185.3
22-50	Willamette R. @ Coburg Bridge	Sec. 29, T17S, R3W	181.9
22-50	Willamette R. @ Beltline Road Bridge	Sec. 18, T17S, R3W	178
22-50	Willamette R. @ Harrisburg Bridge	Sec. 16, T15S, R4W	161.2
22-50	Willamette R. @ Peoria Boat Landing	Sec. 8, T12S, R4W	141.4
22-50	Willamette R. @ Albany Bridge	Sec. 6, T11S, R3W	119.3
22-50	Willamette R. @ Conser Road	Sec. 6, T11S, R3W	113.5
22-50-64	Santiam R. @ I-5 Bridge (previously called Freeway Bridge)	Sec. 4, T10S, R3W	6.0
22-50-64-96	South Santiam R. @ Lebanon Bridge	Sec. 11, T11S, R1W	18.3
22-50-64-96	South Santiam R. @ Hullacres (previously called Fitwater Farm)	Sec. 25, T11S, R2W	13.7
22-50-64-96	South Santiam R. @ Crabtree Bridge	Sec. 3, T11S, R2W	7.6
22-50-90	McKenzie R. @ Hayden Br.	Sec. 20, T17S, R2W	14.8
22-50-90	McKenzie R. @ Old Ferry Crossing	Sec. 24, T17S, R2W	12.3

II. LOWER MONTHLY, WEEKLY, and DAILY WILLAMETTE

IEM No.	Name of Station	Sec., T., R.	River Mile
22-50	Buena Vista Ferry	Sec. 23, T9S, R4W	106.4
22-50	Independence Bridge	Sec. 28, T8S, R4W	96.1
22-50	Salem R.R. Bridge	Sec. 22, T7S, R3W	83.9
22-50	Wheatland Ferry	Sec. 34, T5S, R3W	71.9
22-50	Dundee Monitor	Sec. 30, T3S, R2W	51.8
22-50	Old Newberg Bridge	Sec. 29, T3S, R2W	50.0
22-50	New Newberg Bridge	Sec. 2, T4S, R2W	48.6
22-50	Canby Ferry	Sec. 21, T3S, R1E	34.4
22-50	Oregon City Marina (previously called Marina Mart)	Sec. 2, T3S, R1E	27.8
22-50	Sportcraft	Sec. 30, T2S, R2E	25.5
22-50	Staff Jennings	Sec. 22, T1S, R1E	16.6
22-50	Steel Bridge	Sec. 34, T1N, R1E	12.1
22-50	Swan Island Monitor	Sec. 20, T1N, R1E	8.5
22-50	SP&S R.R. Bridge	Sec. 12, T1N, R1W	7.0

III. LOWER WEEKLY WILLAMETTE

IBM No.	Name of Station	Sec., T., R.	River Mile
20	Columbia R. @ I-5	Sec. 34, T2N, R1E	106.5
22-50	Willamette R. @ SP&S R.R. Bridge	Sec. 12, T1N, R1W	7.0
22-02	Multnomah Channel @ Red's Moorage	Sec. 28, T2N, R1W	11.6
22-50	Willamette R. @ George Grebe Residence	Sec. 22, T2N, R1W	2.5
20	Columbia R. @ Reeder's Beach	Sec. 35, T2S, R1W	97.8
22-02	Multnomah Channel @ Coon Island	Sec. 4, T3N, R1W	7.3
22-02	Multnomah Channel @ St. Helens (previously called Boise Cascade)	Sec. 3, T5N, R1W	0.8
20	Columbia R. @ Park's Port	Sec. 44, T4N, R1W	85.9
20	Columbia R. @ Goble	Sec. 12, T6N, R2W	74.0

IV. UPPER WILLAMETTE MPN STATIONS

IBM No.	Name of Station	Sec., T., R.	River Mile
22-50-96	Coast Fk. Willamette below Cottage Grove	Sec. 22, T20S, R3W	21.0
22-50-96	Coast Fk. Willamette @ London Bridge	Sec. 9, T21S, R3W	25.6
22-50-96-40	Row River @ I-5	Sec. 22, T20S, R3W	.7
22-50-96	Coast Fk. Willamette @ Hwy. 58	Sec. 30, T18S, R2W	6.4
22-50-98	Mid Fk. Willamette downstream from Hills Creek Dam	Sec. 26, T21S, R3E	44.5
22-50-98-60	Salmon Creek @ Hwy. 58	Sec. 16, T21S, R3E	.2
22-50-98	Mid Fork Willamette downstream from North Fk. confluence	Sec. 12, T21S, R2E	33.2
22-50-98	Mid Fork Willamette @ Hellsgate Bridge	Sec. 12, T21S, R2E	36.9
22-50-98	Mid Fork Willamette @ SP RR Bridge	Sec. 21, T20S, R2E	30.0
22-50-98	Mid Fork @ Jasper	Sec. 15, T18S, R2W	8.0
22-50-90	McKenzie R @ Hwy. 126	Sec. 29, T17S, R1W	24.0
22-50-90-10	Mohawk R @ Hill Road	Sec. 17, T17S, R2W	1.6
22-50-82	Long Tom River @ Meadowview Road	Sec. 28, T16S, R5W	23.1
22-50-98-30	Fall Creek	Sec. 6, T19S, R1E	15.7
22-50-98-30-10	Little Fall Creek	Sec. 33, T18S, R1W	.5

V. WILLAMETTE TRIBUTARIES

IEI No.	Name of Station	Sec., T., R.	River Mile
22-50-96-40	Row R. 1 mi. N.E. of Cottage Grove	Sec. 22, T20S, R3W	0.7
22-50-96	Coast Fk. @ Hwy. 58 Br.	Sec. 30, T18S, R2W	6.4
22-50-98	Mid Fk. Willamette R. @ Jasper Bridge	Sec. 15, T18S, R2W	8.0
22-50-90	McKenzie R. @ Coburg Br.	Sec. 9, T17S, R5W	7.1
22-50	Willamette R. @ Harrisburg Br.	Sec. 16, T15S, R4W	161.2
22-50	Willamette R., Irish Bend @ Norwood Island	Sec. 1, T14S, R5W	152.0
22-50-82	Long Tom R. 1 mi. above mouth	Sec. 2, T14S, R5W	1.0
22-50	Willamette R. @ Corvallis intake	Sec. 13, T12S, R5W	134.5
22-50-76	Mary's R. @ Corvallis	Sec. 2, T12S, R5W	1.0
22-50-70	Calapooia R. @ Bryant Pk.	Sec. 12, T11S, R4W	1.0
22-50-64-96	South Santiam R. @ Crabtree Bridge	Sec. 3, T11S, R2W	7.6
22-50-64	Santiam R. @ I-5 Bridge (previously called Freeway Bridge)	Sec. 4, T10S, R3W	6.0
22-50-64-98	North Santiam R. @ Green's Bridge	Sec. 7, T9S, R2W	2.8
22-50-62	Luckiamute R. @ H-17 Br.	Sec. 3, T9S, R3W	2.0
22-50-54	Rickreall Cr. @ Rickreall	Sec. 30, T7S, R4W	8.2
22-50-38	Yamhill R. @ Dayton	Sec. 17, T4S, R5W	5.0
22-50-28-10	Pudding R. @ Pat's Acres	Sec. 6, T4S, R1E	5.3
22-50-16	Clackamas R. @ Hwy. 99E Bridge	Sec. 29, T2S, R2E	0.2
22-50-22	Tualatin R. @ Field's Br. (Hwy 212)	Sec. 34, T2S, R1E	2.0
22-50-07	Kellogg Cr. @ Hwy. 99E Bridge	Sec. 34, T1S, R1E	0.1
22-50-06	Johnson Cr. @ Ochoco Ave.	Sec. 12, T1S, R1E	1.5
22-50-28	Molalla R. @ Knight's Br.	Sec. 35, T3S, R1E	2.8

VI. DISCONTINUED or INFREQUENTLY SAMPLED SURVEILLANCE STATIONS in WILLAMETTE BASIN for 1969

(Willamette River, except where noted otherwise)

IEI No.	Station Name	Sec., T., R.	River Mile	Discont. Date
22-50	Delta Sand & Gravel	Sec. 18, T17S, R3W	177.5	10/21/68
22-50	Koon Sand & Gravel	Sec. 3, T16S, R4W	167.3	
22-50	Corvallis Bridge	Sec. 35, T11S, R5W	131.4	
22-50	Adair Intake	Sec. 3, T11S, R4W,	122.3	
22-50	Manbrin Gardens	Sec. 3, T7S, R3W	80.9	
22-50	Wilsonville Bridge	Sec. 23, T3S, R1W	38.5	
22-50	Oswego Log Dump	Sec. 2, T2S, R1E	20.4	
22-50	Police Dock		13.1	
22-50	Morrison Street Br.	Sec. 3, T1S, R1E	12.8	
22-02-02	Scappoose Slough			
22-50-96	Coast Fk. Willamette above Cottage Grove	Sec. 9, T21S, R3W	25.6	10/21/68
22-50-96	Coast Fk. Willamette below Cottage Grove	Sec. 22, T20S, R3W	21.0	10/21/68
22-50-96	Coast Fk. Willamette @ Saginaw Bridge	Sec. 15, T20S, R3W	20.0	10/21/68
22-50-96	Coast Fk. Willamette @ Creswell	Sec. 13, T19S, R5W	12.8	10/21/68
22-50-98	Mid Fk. Willamette @ Lowell	Sec. 14, T19S, R1W	18.3	10/21/68
22-50-82	Long Tom R. @ Elmira	Sec. 25, T17S, R5W	31.0	10/21/68
22-50-82	Long Tom R. @ Monroe	Sec. 29, T14S, R5W	6.7	10/21/68
22-50-64-96	South Santiam R. @ Lebanon Dam	Sec. 19, T12S, R1W	20.3	10/21/68
22-50-64-96	South Santiam R. @ Mark's Slough	Sec. 2, T12S, R2W	16.0	10/21/68
22-50-64-98	North Santiam R. @ Stayton	Sec. 15, T9S, R1W	16.7	10/21/68
22-50-62	Luckiamute R. @ Helmick State Park	Sec. 18, T9S, R4W	12.6	10/21/68
22-50-38	North Yamhill R. above Yamhill	Sec. 6, T3S, R4W	16.0	10/21/68
22-50-28-10-85	Silver Creek below Silverton	Sec. 32, T6S, R1W	1.3	

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VI. DISCONTINUED or INFREQUENTLY SAMPLED SURVEILLANCE STATIONS cont.

IEM No.	Name of Station	Sec., T., R.	River Mile	Discont. Date
22-50-28-10	Pudding R. @ Hwy. 213 Bridge	Sec. 6, T7S, R1W	49.9	10/21/68
22-50-28-10-85	Silver Creek above Silverton	Sec. 2, T7S, R1W	5.0	10/21/68
22-50-28-10-80	Abiqua Creek @ Tom Hartley Farm	Sec. 34, T6S, R1E	10.0	
22-50-28-10-70	Butte Creek above Scotts Mills	Sec. 19, T6S, R1E	17.0	
22-50-28	Molalla R. above Shady Dell	Sec. 14, T5S, R2E	21.0	10/21/68
22-50-28	Molalla R. @ Hwy. 211 Br.	Sec. 3, T5S, R2E	18.6	10/21/68
22-50-28-10	Pudding R. @ Hwy. 211 Br.	Sec. 11, T5S, R1W	22.9	10/21/68
22-50-28-10	Pudding R. below Birdseye outfall	Sec. 16, T5S, R1W	27.0	10/21/68
22-50-28-10	Pudding R. above Birdseye outfall	Sec. 16, T5S, R1W	27.1	10/21/68
22-50-28	Molalla R. @ Canby	Sec. 5, T4S, R1E	3.5	10/21/68
22-50-16	Clackamas R. @ Carver	Sec. 13, T2S, R2E	8.1	10/21/68

TUALATIN BASIN

IBM NO.	Name of Station	Sec., T., R.	River Mile
22-50-22-40-10	Beaverton Cr. @ Orenco	Sec. 35, T1N, R2W	0.3
22-50-22-40	Rock Cr. @ Orenco	Sec. 34, T1N, R2W	5.1
22-50-22-40	Rock Cr. @ Hwy. 8	Sec. 9, T1S, R2W	1.2
22-50-22-50	Dairy Cr. @ Hwy. 8	Sec. 1, T1S, R3W	2.0
22-50-22-70	Gales Cr. @ Carnation Rd.		1.7
22-50-22-80	Scoggins Cr. @ Lee Road Br. (above Stimson Mill)	Sec. 17, T1S, R4W	6.0
22-50-22-80	Scoggins Cr. @ Hwy. 47 Br.	Sec. 26, T1S, R4W	1.7
22-50-22	Tualatin R. @ Hwy. 47 Br. (@ Gaston)	Sec. 35, T1S, R4W	64.8
22-50-22	Tualatin R. at Springhill Rd. Br. (1 mi. S. of Dilley)	Sec. 24, T1S, R4W	60.0
22-50-22	Tualatin R. @ Fernhill Road Br. (above Forest Grove STP outfall)	Sec. 8, T1S, R3W	57.5
22-50-22	Tualatin R. @ LaFollet Rd. Br.	Sec. 9, T1S, R3W	56.0
22-50-22	Tualatin R. @ Golf Course Road Br.	Sec. 9, T1S, R3W	52.8
22-50-22	Tualatin R. @ Jackson	Sec. 12, T1S, R3W	45.0
22-50-22	Tualatin R. @ Rood Rd. Br.	Sec. 17, T1S, R2W	38.7
22-50-22	Tualatin R. @ Farmington Rd. Br.	Sec. 28, T1S, R2W	33.5
22-50-22	Tualatin R. @ Hwy. 210 (Scholls Road Br.)	Sec. 10, T2S, R2W	27.1
22-50-22	Tualatin R. @ Elsner Rd. Br.	Sec. 19, T2S, R1W	16.0
22-50-22-20-10	Cedar Cr. @ Hwy. 99W	Sec. 30, T2S, R1W	1.0
22-50-22-20-10	Cedar Cr. (Chicken Cr.) @ W. Sherwood	Sec. 32, T2S, R1W	1.8
22-50-22	Tualatin R. @ Hwy. 99W Br. (Rommers Rest)	Sec. 16, T2S, R1W	11.5
22-50-22-10	Fanno Cr. @ Durham Station	Sec. 13, T2S, R1W	1.2
22-50-22	Tualatin R. @ Boones Ferry Rd. (@ Tualatin; Hwy. 217)	Sec. 24, T2S, R1W	8.5
22-50-22	Tualatin R. @ Shipley Br.	Sec. 21, T2S, R1E	5.5
22-50-22	Tualatin R. @ Hwy. 212 Br. (1½ mi. W. of Willamette) (Fields Br.)	Sec. 34, T2S, R1E	2.0

DISCONTINUED or INFREQUENTLY SAMPLED SURVEILLANCE STATIONS
in TUALATIN BASIN as of 10/21/68

IFM No.	Name of Station	Sec., T., R.	River Mile
22-50-22-70	Gales Cr. @ Stringtown Rd.		7.2
22-50-22-50-50	E. Fk. Dairy Cr. @ U.S. 26 Br.		5.5
22-50-22-50-40	W. Fk. Dairy Cr. @ 3rd Br. W. of Cloverleaf intersection @ Hwy. 6 (Mohalem Hwy.)	Sec. 9, T2N, R4W	4.0
22-50-22-50-40	W. Fk. Dairy Cr. on Cedar Canyon Road - Banks	Sec. 25, T2N, R4W	8.0
22-50-22-40	Rock Cr. on W. Union Rd.	Sec. 24, T1N, R1W	8.4
22-50-22-40-10-10	Cedar Mill Cr. @ Hwy. 26	Sec. 4, T1S, R1W	2.8
22-50-22-40-10-30	Golf Cr. @ Sunset Hwy.	Sec. 15, T1S, R1W	3.7
22-50-22-40-10-30	Golf Cr. @ Canyon Road	Sec. 1, T1S, R1W	2.3
22-50-22-40-10	Beaverton Cr. @ Canyon Drive-In	Sec. 1, T1S, R1W	8.7
22-50-22-40-10-20	Messenger Cr. @ 2nd Br. in Meeke & Co. Trailer Park	Sec. 11, T1S, R1W	0.3
22-50-22-40-10	Beaverton Cr. 200 yds. above Beaverton STP	Sec. 10, T1S, R1W	7.4
22-50-22-40-10	Beaverton Cr. 75 yds. above Textronics treatment plant	Sec. 9, T1S, R1W	7.0
22-50-22-40-10	Beaverton Cr. @ Br. below Textronics treatment plant	Sec. 9, T1S, R1W	6.3
22-50-22-40-10	Beaverton Cr. @ 185 Avenue	Sec. 7, T1S, R1W	3.7
22-50-22-40-10	Beaverton Cr. @ Baseline Rd.	Sec. 3, T1S, R2W	2.4
22-50-22-40	Rock Cr. @ River Road		0.7
22-50-22-50-20	Council Creek		
22-50-22-50-10	McKay Creek		
22-50-22-40-10-04	Bronson Creek		
22-50-22	Oswego Canal (1963-4)		6.8
22-50-22-10	Fanno Cr. on Bonito Rd.	Sec. 12, T2S, R1W	2.4
22-50-22-10	Fanno Cr. ½ mi. S. of Metzger plant	Sec. 27, T1S, R1W	6.4
22-50-22-10	Fanno Cr. @ Hwy. 210	Sec. 23, T1S, R1W	7.3
22-50-22-10	Fanno Cr. on Hwy. 217	Sec. 27, T1S, R1W	8.7
22-50-22-10	Fanno Cr. @ Scholls Fy. Rd.	Sec. 23, T1S, R1W	11.1
22-50-22-10	Fanno Cr. @ Oleson Road	Sec. 13, T1S, R1W	15.1

NORTH COAST BASIN - ACTIVE STATIONS

IBM NO.	Station No. & Name	Sec., T., R.	River Mile
11-30	1-5 Nehalem Bay		
11-30	Nehalem R. @ Batterson (previously called Foss)	Sec. 35, T3N, R9W	13.3
11-30	Nehalem R. @ Hwy. 26	Sec. 4, T4N, R7W	36.5
11-75	1-10 Tillamook Bay		
11-65	4 Wilson R. @ Hwy. 6	Sec. 24, T1S, R9W	8.5
11-70	3 Trask R. @ Hwy. 101	Sec. 6, T2S, R9W	4.0
11-75	2 Tillamook R. @ Fraser Rd.	Sec. 35, T1S, R10W	2.6
11-90	Nestucca R., E. of Beaver	Sec. 29, T3S, R9W	15.7
11-90	Nestucca R. @ Cloverdale	Sec. 22, T4S, R10W	7.1
11-80	1-6 Netarts Bay		

NORTH COAST BASIN

Inactive Stations (as of 10-21-66)

IBM NO.	Station No.	Name	Sec., T., R.	River Mile
11-90		Nestucca R.N. of Hebo	Sec. 12, T4S, R10W	11.0
11-90		Nestucca R. S. of Hebo	Sec. 14, T4S, R10W	9.5
21-40		Big Cr. above Fish Hatchery	Sec. 3, T7N, R7W	5.0
21-40		Big Cr. on County Rd.	Sec. 18, T8N, R7W	0.2
21-22-98		N. Fk. Klaskanine R. above Fish Hatchery	Sec. 20, T7N, R8W	3.5
21-22-98		N. Fk. Klaskanine R. below Fish Hatchery	Sec. 13, T7N, R8W	0.5
11-05		Necanicum R. @ Hwy. 101 & 26	Sec. 10, T5N, R10W	5.8
11-50	1	Miami R. @ Hwy. 101 Br.		0.4
11-50	2	Miami R. @ Private Br.		1.5
11-50	3	Miami R.		4.5
11-60	1	Kilchis R. @ Hwy 101 Br.		0.5
11-60	2	Kilchis R. @ County Rd. Br.		1.2
11-60	3	" " @ Logging Rd. Br.		2.7
11-60	4	" " @ County Park		7.2
11-65	1	Wilson R. @ Till. Cheese Outfall		1.0
11-65	2	Wilson R. @ Hwy. 101 Br.		1.7
11-65	3	" " @ Wilson R. Loop Rd.		3.5
11-65	5	Wilson R. @ Hwy. 6 Br.		13.2
11-65	6	Wilson R. @ Lee's Camp		23.3
11-70	1	Trask R. @ Netarts Rd.		2.2
11-70	2	Trask R. @ Tillamook R. Loop Rd.		3.2

Inactive Stations Cont'd.

JPM NO.	Station No. & Name	Sec., T., R.	River Mile
11-70	4 Trask R. @ Trask R. Loop Rd.		7.0
11-70	5 Trask R. @ above Panther Cr. Confluence		12.9
11-75	1 Tillamook R. @ Netarts Rd.		1.4
11-75	3 Tillamook R. @ Tillamook R. Loop Rd.		4.0
11-75	4 Tillamook R. @ Bewley Cr. Rd.		6.1
11-75	5 Tillamook R. @ Pleasant Valley(Harry Webbers)		9.9
11-75	6 Tillamook R. @ Yellow Fir Rd.		11.3
	1 Patterson Cr.		0.1
	2 " "		0.5
	3 Hall Slough		1.2
	4 Dougherty Slough		3.0
	5 Hogarton Slough		2.8

MID COAST BASIN - CURRENT STATIONS

IBM NO.	Name of Station	Sec., T., R.	River Mile
12-02	Salmon R. E. of Otis Junction	Sec. 30, T6S, R10W	4.0
12-05	Dee R. @ Hwy. 101 Br.	Sec. 15, T7S, R11W	0.1
12-07	Schooner Cr. @ Hwy. 101 Br. (Sanitary Sample Only)	Sec. 34, T7S, R11W	0.1
12-07	Schooner Cr. 2.5 mi. above Taft	Sec. 30, T7S, R10W	2.6
12-10	Siletz R. 3 mi. N. of Siletz	Sec. 28, T9S, R10W	31.5
12-35	Yaquina R. @ Elk City	Sec.14,T10S,R9W	21.6
12-55	Alsea R. E. of Tidewater	Sec. 28, T13S, R10W	13.4
12-85	Siuslaw R. @ Mapleton Br.	Sec. 2, T18S, R10W	20.5
12-35	Yaquina Bay - Stations 1-22		
12-43	King's Slough @ Boat Dock		
12-27	Boones Slough @ (West) Yaquina Bay Rd.		
12-29	Hutes Slough @ (West) Yaquina Bay Rd.		
12-39	Flescher Slough @ (East) Yaquina Bay Rd.		
12-40	Pooles Slough @ Oyster City Oyster Co.		
12-33	Olalla Slough @ S.E. 10th (previously called Fircrest Road)		
12-33	Olalla Cr. @ Hwy. 20		
12-31	Depoe Slough @ (West) Yaquina Bay Rd. Br.		
	Toledo STP		
	Georgia Pacific Outfall		

DISCONTINUED OR INFREQUENTLY SAMPLED STATIONS

IBM NO.	Name of Station	Sec., T., R.	River Mile
12-35	Yaquina R. 0.5 mi. off Hwy. 20	Sec. 36, T10S, R10W	27.5
12-60	Yachats R. 1.4 mi. E. of Yachats	Sec. 26, T14S, R12W	1.4

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UPPER ROGUE RIVER BASIN
Active Stations

No.	Name of Station	Sec., T., R.	River Mile	Elev.
15-50	Rogue R. @ Laurelhurst Pk. (near Prospect)	Sec. 16, T33S, R2E	164.1	1700
15-50	Rogue R. @ Dodge Br.	Sec. 17, T35S, R1W	138.4	1280
15-50-63	Little Butte Cr. @ Agate Rd.	Sec. 15, T36S, R1W	1.3	1210
15-50-60	Bear Cr. @ Mtn. Ave. (Ashland)	Sec. 4, T39S, R1E	22.4	1780
15-50-60	Bear Cr. @ Valley View Rd. (previously known as Bear Cr. opposite Jackson Hot Springs)	Sec. 31, T38S, R1E	19.9	1640
15-50-60	Bear Cr. @ Fern Valley Rd. Br.	Sec. 9, T38S, R1W	14.4	1470
15-50-60	Bear Cr. @ Main St. Br. (in Medford)	Sec. 30, T37S, R1W	9.0	1330
15-50-60	Bear Cr. Hwy. 62 Br. (1 mi. N. of Medford)	Sec. 13, T37S, R2W	7.6	1300
15-50-60	Bear Cr. @ Central Point	Sec. 34, T36S, R2W	3.8	1180
15-50	Rogue R. @ Raygold Dam	Sec. 18, T36S, R2W	125.7	1140
15-50	Rogue R. @ Rocky Pt. Br., (Hwy. 234) (S. of Gold Hill)	Sec. 20, T36S, R3W	117.3	1020
15	Rogue R. @ Valley of the Rogue State Pk.	Sec. 19, T36S, R3W	116.1	1000
15-50	Rogue R. below Grave Cr.	Sec. 1, T34S, R5W	68.0	620
15-50	Rogue R. @ Robertson's Br. (near Merlin)	Sec. 26, T35S, R7W	86.0	790
15-50	Rogue R. 2½ mi. west of Grants Pass	Sec. 24, T36S, R6W	99.2	880
15-50	Rogue R. @ Hwy. 99 Br. (in Grants Pass)	Sec. 19, T36S, R5W	101.3	820
15-50-40	Applegate R. @ Hwy. 199 Br. (previously known as Wilderville Bridge)	Sec. 31, T36S, R5W	2.6	850

LOWER ROGUE RIVER BASIN, SOUTH COAST BASIN
& COQUILLE BAY

ACTIVE STATIONS

IBM NO.	Name of Station	Sec., T., R.	River Mile	Elev.
15-50	Rogue R. @ Huntley Park	Sec. 11, T36S, R14W	7.0	< 500
15-50	Rogue R. @ Jot's Marina(Start 10-1-68)			
14-40-96	S. Fk. Coquille R. @ Myrtle Point Br.(Start 10-21-68)			
14-40	Coquille R. W. of Norway			
14-95	Chetco R. 3.1 mi. above Hwy. 101 Br.	Sec. 34, T40S, R13W	4.5	
14-40	Stations 1-10 Coquille Bay			

ROGUE RIVER AND SOUTH COAST BASINS

INACTIVE STATIONS

IDN NO.	Name of Station	Sec., T., R.	River Mile	Elev.
15-50	Rogue R. @ Lobster Cr. Br.	Sec. 31, T35S, R13W	11.0	<500
15-50	Rogue R. below mouth of Illinois R.	Sec. 1, R13W, T36S	17.6	<500
15-50	Rogue R. 500 ft. above mouth of Illinois R. @ Agness	Sec. 18, T35S, R11W	27.1	<500
15-50-30	Graves Cr. 0.5 mi. above mouth	Sec. 6, R7W, T34S	0.5	620
15-50-10	Illinois R. @ mouth	Sec. 18, T35S, R11W	0.1	<500
15-50-40	Applegate R. @ Applegate	Sec. 22, T38S, R4W	24.8	1240
14-10	S. Fk. Coos R. at ford crossing beyond Dellwood	Sec. 28, T25S, R11W	10.0	
14-40-98	N. Fk. Coquille R. 0.4 mi. N. of Myrtle Point	Sec. 8, T29S, R12W	.2	
14-40-95	S. Fk. Coquille R. 0.6 mi. N. of Powers	Sec. 12, T31S, R12W	27.2	
14-60	Sixes R. 1 mi. above Hwy. 101 Br.	Sec. 10, T32S, R15W	7.2	
14-62	Elk R. 1 mi. above Hwy. 101 Br.	Sec. 21, T32S, R15W	4.5	
15-50	Rogue River @ Hwy. 101 Br.		0.6	
15-50	Rogue R. @ Plywood Mill	Sec. , T36S, R14W	4.7	
14-80	Pistol R. 4 mi. above Hwy. 101 Br.	Sec. 22, T38S, R14W	4.5	
14-99	Winchuck R. 1.3 mi. above Hwy. 101 Br.	Sec. 24, T41S, R13W	2.5	

HOOD - SANDY BASIN - Active Stations

IRM NO.	Name of Stations	Sec., T., R.	River Mile
23-10	Sandy R. @ I-80 Br.	Sec. 25, T1N, R3E	2.1
23-10	Sandy R. @ Troutdale Br.		
23-10	Sandy R. @ Dodge Park	Sec. 24, T1S, R4E	8.4
23-10	Sandy R. @		
24-30	Hood R. above PP&L.*	Sec. 36, T3N, R10E	1.8
24-30	Hood R. above rapids	Sec. 1, T1N, R9E	10.3
24-30	Hood R. above U.S. Plywood (Dee)	Sec. 36, T3N, R10E	13.5
24-30-20	West Fk. Hood R. @ Mouth	Sec. 1, T1N, R9E	.01

INACTIVE STATIONS

IRM NO.	Name of Stations	Sec., T., R.	River Mile
23-10	Sandy R. @ Troutdale R.R. Bridge	Sec. 24, T1N, R3E	2.7

*This station was previously called PGE

DESCHUTES BASIN - ACTIVE STATIONS

ITEM NO.	Name of Station	Sec., T., R.	River Mile	Elev.
25-30	Deschutes R. @ mouth	Sec. 26, T2N, R15E	0.3	< 500
25-30	Deschutes R. @ Maupin	Sec. 33, T4S, R13E	51.3	820
25-30	Deschutes @ Warm Springs Br.	Sec. 30, T9S, R13E	97.0	1360
25-30-50	Crooked R. @ Cove St. Pk.	Sec. 11, T12S, R12E	2.0	1710
25-30	Deschutes W. of Cove State Park	Sec. 16, T12S, R12E	116.1	1730
25-30-50	Crooked R. 4½ mi. E. of Terrebone	Sec. 20, T14S, R14E	30.0	2780
25-30	Deschutes @ Lower Bridge	Sec. 16, T14S, R12E	133.7	2530
25-30	Deschutes @ irrigation dam, N. city limits of Bend	Sec. 29, T17S, R12E	164.9	3530
25-30	Deschutes @ upper end Brooks-Scanlon log pond	Sec. 6, T18S, R12E	168.8	3600
25-30	Deschutes @ Tumalo Br.	Sec. 6, T17S, R12E	158.2	3180
25-30-45	Metolius R. @ Head	Sec. 29, T11S, R11E	41.2	2970
25-30-45	Metolius R. N. of Camp Sherman	Sec. 3, T12S, R9E	2.7	

DESCHUTES BASIN - INACTIVE STATIONS

ITEM NO.	Name of Station	Sec., T., R.	River Mile	Elev.
25-30	Deschutes @ Cline Falls State Park	Sec. 14, T15S, R12E	144.9	2800
25-30-50-40	Ochoco Creek			
25-30-45	Metolius R. above Spring Cr.	Sec. 29, T11S, R11E	10.5	1830
25-30-45	Metolius R. between Sheep and Code Creeks	Sec. 12, T11S, R9E	24.0	2420
25-30-47	Haystack Reservoir	Sec. 27, T12S, R13E	10.1	2842

UMPQUA RIVER BASIN

Active Stations

IBM NO.	Name of Station	Sec., T., R.	River Mile	Elev.
13-50	Umpqua R. @ Scottsburg Br.	Sec. 18, T22S, R9W	27.2	
13-50-40	Elk Creek @ Elkton	Sec. 20, T22S, R7W	0.2	
13-50	Umpqua R. @ Elkton Br.	Sec. 30, T22S, R7W	48.6	
13-50	Umpqua R. @ Kellogg Br.	Sec. 20, T23S, R7W	71.0	
13-50 N.	Umpqua R. @ Umpqua Rr.	Sec. 25, T25S, R7W	102.7	
13-50-98	Umpqua R. @ Garden Valley Rd. Br. (Brown's Br.)	Sec. 33, T26S, R5W	1.8	
13-50-96	S. Umpqua R. @ Melrose Rd.	Sec. 16, T27S, R6W	7.1	400
13-50-96	S. Umpqua R. @ Winston Br.	Sec. 15, T28S, R6W	21.0	400
13-50-96	S. Umpqua R. @ Myrtle Cr. Br.	Sec. 28, T29S, R5W	38.8	600
13-50-96-30	Cow Creek ½ mi. below Riddle	Sec. 19, T30S, R5W	1.3	600
13-50-96-30	Cow Creek 4 mi. above Riddle	Sec. 33, T30S, R6W	6.2	600
13-50-96	S. Umpqua R. 2 mi. N. of Canyonville	Sec. 22, T30S, R5W	51.0	700
13-50-98	N. Umpqua R. @ Lone Rock Br.	Sec. 17, T26S, R3W	31.1	

Inactive Stations

IBM NO.	Name of Station	Sec., T., R.	River Mile	Elev.
13-50	Umpqua R. @ Bullock Br. (at Tyee Rd.)	Sec. 13, T24S, R7W	79.4	
13-50-98	N. Umpqua R. @ Whistlers Bend	Sec. 17, T26S, R4W	24.0	
13-50-96	S. Umpqua R. @ Days Cr. Br.	Sec. 9, T30S, R4W	58.1	800
13-50-96-30	Cow Cr. ½ mi. below Glendale	Sec. 32, T32S, R5W	40.0	800
13-50-96-30	Cow Cr. ½ mi. above Glendale @ city water intake	Sec. 33, T32S, R5W	42.0	800
13-50	Stations 1-10 Umpqua Bay			

KLAMATH BASIN - ACTIVE STATIONS

IBM NO.	Name of Station	Sec., T., R.	River Mile	Elev.
43-40-90-20	Sprague R. ¼ mi. above Chiloquin	Sec. 3, T35S, R7E	0.5	4190
43-40-90	Williamson R. 1½ mi. above Chiloquin	Sec. 27, T34S, R7E	12.8	4190
43-40-90	Williamson R. @ Hwy. 97 Br.	Sec. 21, T35S, R7E	7.1	
43-40	Link R. @ Hwy. 140 Exit	Sec. 32, T38S, R8E	252.8	
43-40	Klamath R. Hwy. 97 Br. (3½ mi. S. of K. Falls)	Sec. 18, T39S, R9E	248.4	4100
43-40	Klamath R. @ Keno Bridge	Sec. 31, T39S, R8E	234.9	4100
43-40	Klamath R. below Big Bend power house	Sec. 14, T40S, R6E	219.9	3260
43-30	Klamath Strait @ Pumping Plant F	Sec. 22, T40S, R8E	1.7	4070
43-10	Lower Lost R. @ Diversion Dam	Sec. 17, T41S, R11E	7.7	4050
43-20	Lost R. Diversion Channel below Wilson Br.	Sec. 30, T39S, R9E	7.0	4090
43-10	Lost R. @ Harpold Dam	Sec. 19, T39S, R11E	40.7	4100

KLAMATH BASIN - INACTIVE STATIONS

IBM NO.	Name of Station	Sec., T., R.	River Mile	Elev.
43-40-90	Williamson R. @ Williamson R. store	Sec. 30, T35S, R7E	4.6	4170
43-40	Exit of Klamath Lake @ Fremont St. Br., K. Falls	Sec. 30, T38S, R9E	253.0	4100
43-10	Lost R. @ Malone Dam	Sec. 18, T41S, R13E	64.3	4160

COLUMBIA RIVER AND EASTERN OREGON BASINS -- Active Stations

IRM NO.	Name of Station	Sec., T., R.	River Mile	Elev.
Columbia River:				
20	Columbia R. @ Clifton	Sec. 31, T9N, R5W	38.4	<500
20	Columbia R. @ Rainier Boat Dock	Sec. 8, T7N, R2W	66.2	<500
20	Columbia R. @ Goble	Sec. 12, T6N, R2W	74.0	<500
20	Columbia R. @ I-5 Br.	Sec. 34, T2N, R1E	106.5	<500
20	Columbia R. @ Rooster Rock Park	Sec. 24, T1N, R4E	128.4	<500
20	Columbia R. @ Bonneville Dam	Sec. 21, T2N, R7E	146.1	<500
20	Columbia R. @ The Dalles Dam	Sec. 36, T2N, R13E	192.8	<500
20	Columbia R. @ John Day Dam		215.6	<500
20	Columbia R. @ Boardman	Sec. 8, T4N, R25E	268.1	<500
20	Columbia R. @ McNary Dam	Sec. 10, T5N, R28E	292.0	<500
John Day River:				
26-10	John Day R. @ McDonald Ferry	Sec. 11, T1N, R19E	20.9	<500
26-10	John Day R. 1½ mi. W. of Mt. Vernon	Sec. 30, T13S, R30E	237.2	2780
26-10	John Day R. @ W. city limits of John Day	Sec. 22, T13S, R31E	247.0	3020
Umatilla River:				
27-20	Umatilla R. 1-3/4 mi. S. of Umatilla	Sec. 21, T5N, R28E	2.0	<500
27-20	Umatilla R. @ Reith Br.	Sec. 13, T2N, R31E	50.0	925
27-20	Umatilla R. @ Hwy. 11 Br. (in Pendleton)	Sec. 1, T2N, R32E	57.1	1025
Powder River:				
32-50	Powder R. @ Hwy. 86 Br.	Sec. 32, T8S, R43E	32.1	2650
32-50	Powder R. 4½ mi. N. of Baker	Sec. 17, T8S, R40E	75.0	3350
32-50	Powder R.			

IBM I.D.	Name of Station	Sec., T., R.	River Mile	Elev.
Burnt River:				
32-55	Burnt R. @ Huntington	Sec. 12, T14S, R44E	3.5	2140
Snake River:				
30	Snake R. @ Weiser Br.	Sec. 21, T15S, R47E	351.0	2090
30	Snake R. @ Payette Br.	Sec. 14, T17S, R47E	365.5	2125
30	Snake R. @ Ontario Br.	Sec. 2, T18S, R47E	374.0	2135
30	Snake R.			
Malheur River:				
33-80	Malheur R. 1½ mi. No. of Ontario	Sec. 28, T17S, R47E	0.4	2125
33-80	Malheur R.			
Owyhee R.:				
34-30	Owyhee R. @ Hwy. 201 Br.	Sec. 35, T20S, R46E	2.9	2175
Walla Walla River:				
28-40	Walla Walla R. @ Hwy. 11 Br.(previously Hwy. 3 Br.)	Sec. 11, T6N, R35E	38.7	825
28-40	Walla Walla R. above Milton-Freewater	Sec. 20, T5N, R36E	45.8	1270
Wallowa River:				
31-10-40	Wallowa R. @ Minam	Sec. 29, T2N, R41E	10.0	2520
Grande Ronde River:				
31-10	Grande Ronde R. @ Palmer Jct.	Sec. 23, T3N, R40E	88.0	
31-10	Grande Ronde R. @ Hwy. 82 (east city limits of Elgin)	Sec. 14, T1N, R39E	96.0	
31-10	Grande Ronde R. 3-3/4 mi. S. of Elgin	Sec. 3, T1S, R39E	103.3	2660
31-10	Grande Ronde R. @ Hilgard State Pk.	Sec. 31, T2S, R37E	171.0	

COLUMBIA RIVER AND EASTERN OREGON BASINS
Inactive Stations

IBM NO.	Station Name	Sec., T., R.	River Mile	Elev.
28-40	Walla Walla River @ Hwy. 410 Bridge		12.2	<500
28-40-50	Yellowhawk Creek @ Hwy. 3	Sec. 2, T6N, R35E	1.1	825
28-40-20-20	Dry Creek near Umapine	Sec. 26, T6N, R34E	2.3	650
28-40-20	Pine Creek near Umapine	Sec. 35, T6N, R34E		650
28-40-96	North Fork Walla Walla River	Sec. 22, T5N, R36E	.4	1390
28-40-98	South Fork Walla Walla River	Sec. 4, T4N, R37E	8.0	1940
31-10-40	Wallowa Lake	Sec. 5, T3S, R45E	50.7	4400
31-10	Grande Ronde @ Hwy. 3		26.2	1250
31-10-70	Catherine Creek @ Cove	Sec. 7, T3S, R40E	28.2	3230
31-10	Grande Ronde near Red Bridge State Park	Sec. 20, T3S, R36E	178.3	3160
20	Columbia River @ Umatilla Bridge	Sec. 9, T6N, R28E	290.5	<500
20	Columbia River @ Longview Br.	Sec. 8, T7N, R2W	66.0	
27-20	Umatilla R. @ Yoakum Br.	Sec. 2, T2N, R30E	38.4	720
30	Snake R. @ Hwy. 20 Br. in Nyssa	Sec. 32, T19S, R47E	385.0	2150
33-80	Malheur R. 5½ mi. E. of Vale (Halliday Rd.)	Sec. 18, T18S, R46E	15.0	2225
27-05	Willow Cr. @ Heppner Jct.	Sec. 35, T2S, R26E	51.2	NA
27-05	Willow Cr. @ Heppner		4.2	
41-20	Silvies R. N. of Seneca	Sec. 27, T16S, R31E	83.2	4680
41-20	Silvies R. S. of Seneca	Sec. 11, T17S, R31E	79.2	4680
41-20	Silvies R. E. of Burns	Sec. 7, T23S, R31E	3.3	4130

Instive Stations

HUM NO.	Station Name	Sec., T., R.	River Mile	Elev.
41-75	Donner & Blitzen R. @ Malheur Refuge Rd. to Diamond	Sec. 14, T29S, R31E	26.5	4500
41-75	Donner & Blitzen R. @ French Glen	Sec. 6, T32S, R32E	42.9	5000
41-90	Trout Creek @ Whitehorse Ranch Road	Sec. 26, T39S, R36E	20.2	4500
34-60	Crooked Creek @ Hwy. 95 Br.	Sec. 6, T32S, R41E	9.0	3540
34-30	Owyhee R. @ Rome	Sec. 19, T31S, R42E	119.6	3400
34-65	Jordan Creek @ Hwy. 95 Br.	Sec. 1, T30S, R45E	38.3	4280
30-95	Succor Creek	Sec. 32, T32S, R46E		2500
33-80-30	Willow Creek @ Vale	Sec. 20, T18S, R45E	.8	2225

GOOSE and SUMMER LAKES
Inactive Stations

IEM NO.	Station Number and Name		Sec., T., R.	River Mile	Elev
	H4-V8	Goose Lake, W. side at state line, 1 mi. offshore, 6 ft. depth (bottom)	Sec. 21, T41S, R19E		470
	H9-V8	Goose Lake, E. side at state line, 1½ mi. offshore, 7 ft. depth (bottom)	Sec. 22, T41S, R20E		470
	H9-V5	Goose Lake, approx. 3 mi. N. of state line, 1½ mi. offshore, E. side of lake, 6 ft. depth (bottom)	Sec. 3, T40S, R20E		470
	H7-V4	Goose Lake, approx. 5 mi. N. of state line, near center (east-west) of lake, 7½ ft. depth (bottom)	Sec. 31, T40S, R20E		470
	H4-V5	Goose Lake, approx. 3 mi. N. of state line, 1 mi. offshore, W. side of lake, 2 ft. depth (bottom)	Sec. 3, T41S, R19E		470
42		Goose Lake, from shore .8 mi. S. of state line	Sec. 20, T41S, R19E		470
42-90		New Pine Creek ¼ mi. E. of city center of New Pine Creek	Sec. 13, T40S, R20E	2.6	45
42-80		Kelly Creek @ Hwy. 399 Bridge	Sec. 18, T41S, R21E	1.8	46
42-70		Crane Creek @ Hwy. 399 Bridge	Sec. 7, T40S, R20E	1.5	48
42-60		Thomas Creek @ Hwy. 140 Bridge	Sec. 17, T39S, R20E	5.5	47
42-60-20		Cox Creek @ county road culvert ½ mi. upstream from Auger Creek confluence	Sec. 30, T38S, R20E	1.5	48
42-50		Cottonwood Creek @ Hwy. 140 Br.	Sec. 12, T39S, R18E	7.1	49
42-50-10		Muddy Creek @ Hwy. 140 Bridge	Sec. 17, T39S, R19E	7.3	49
42-40		Antelope Creek @ county road bridge 1 mi. N. of Westside store	Sec. 4, T40S, R19E	4.3	47
42-30		Drews Creek @ county road 2 mi. S.W. of Westside store	Sec. 19, T40S, R19E	3.9	47
42-20		Dry Creek @ county road 2 mi. N. of state line on W. side of Goose Lake	Sec. 18, T41S, R19E	0.7	47
42-60		Thomas Creek @ county road xing 4½ mi. upstream from Hwy. 140	Sec. 24, T38S, R19E	10.3	48
42-25		Auger Creek @ county road culvert ½ mi. downstream from White King Mine	Sec. 13, T38S, R19E	6.2	53
42-01		Silver Creek @ Hwy. 31, ¼ mi. N. of Silver Lake Ranger Station	Sec. 21, T28S, R14E	0.2	4

Inactive Stations Cont'd.

	Ana Springs Reservoir	Sec. 6, T30S, R17E		4250
42-10	Chewaucan R. ½ mi. above Paisley Hill	Sec. 19, T33S, R18E	27.6	NA
	Lake Abert @ Hwy. 395	Sec. 36, T34S, R12E		5000
42-05	Honey Cr. @ Plush	Sec. 28, T36S, R24E	2.1	NA
	Hart Lake @ Plush	Sec. 27, T36S, R24E		
42-10-10	Crooked Cr. 1 mi. N. of Valley Falls	Sec. 31, T35S, R12E	4.1	4300
42-10	Chewaucan R. @ Paisley	Sec. 24, T33S, R18E	26.4	4250 NA
42-10	Chewaucan R. @ Hwy. 31	Sec. 13, T35S, R20E	8.1	NA 4300

Biological Sampling Stations

Silver Cr. @ Hwy. 31

Chewaucan R. @ Paisley

Chewaucan R. 0.5 mi. above Paisley Hill

Crooked Cr. 1 mi. N. of Valley Falls

Honey Cr. @ Plush

Cottonwood Cr. @ Hwy. 66

Antelope Cr. @ Westside

Thomas Cr. @ Lakeview

Cox Cr. @ Logging Rd. 13 mi. N. of Lakeview

Ana Springs Reservoir

Drew Reservoir

Lake Abert

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ENVIRONMENTAL RADIATION SURVEILLANCE STATIONS

IPM No.	River	Sta. No.	Location	Map Reference	River Mile
COLUMBIA RIVER BASIN					
20	Columbia		The Dalles Dam	S.36,T2N,R13E	192.8
20	Columbia		Rooster Rock	S.24,T1N,R4E	128.4
20	Columbia		Goble	S.12,T6N,R2W	74.0
20	Columbia		Beaver Army Term. (Port Westward)	Sec.16,T8N,R4W	53.6
20	Columbia		Astoria	Sec.9,T8N,R9W	13.7
DESCHUTES RIVER BASIN					
25-30	Deschutes	DE-1	U.S. 30 Br.	S.26,T2N,R15E	0.3
EASTERN ORE. RIVER BASINS					
31-10	Grande Ronde		3¼ mi. S. of Elgin	S.3,T1S,R39E	103.3
26-10	John Day		McDonald Ferry	S.11,T1N,R19E	20.9
27-20	Umatilla		1¾ mi. S. of Umatilla	S.21,T5N,R28E	2.0
32-50	Powder		4½ mi. N. of Baker	S.17,T8S,R40E	75.0
30	Snake		Ontario Br.	S.2,T18S,R47E	374.0
33-80	Malheur		1½ mi. N. of Ontario	S.28,T17S,R47E	0.4
KLAMATH RIVER BASIN					
43-40	Klamath	K-7	Below Big Bend Power House	S.14,T40S,R6E	219.9
43-40-90-20	Sprague	K-1	¼ mi. above Chiloquin	S.3,T35S,R7E	0.5
43-40-90	Williamson	K-2	1½ mi. above Chiloquin	S.27,T34S,R7E	12.8
MID COAST RIVER BASINS					
12-10	Siletz		3 mi. N. of Siletz	S.28,T9S,R10W	31.5
12-85	Siuslaw		Mapleton Br.	S.2,T18S,R10W	20.5

IBM NO.	River	Sta. No.	Location	Map Reference	River Mile
NORTH COAST RIVER BASIN					
11-30	Nehalem		Batterson	Sec.35,T3N,R9W	13.3
11-65	Wilson		Hwy. 6-Br.	S.24,T1S,R9W	8.5
ROGUE RIVER BASIN					
15-50	Rogue	Ro-2	Robertson's Br. near Merlin	S.26,T35S,R7W	86.0
SOUTH COAST RIVER BASINS					
	Coquille		Norway		
TUALATIN BASIN					
22-50-22	Tualatin		Elsner Rd. Br.	S.19,T2S,R1W	16.0
UMPQUA RIVER BASIN					
13-50	Umpqua	U-2	Elkton Br.	S.30,T22S,R7W	48.6
WILLAMETTE RIVER BASIN					
22-50	Willamette	W-1	Springfield Br.	S.34,T17S,R3W	185.3
22-50	Willamette	W-5	Harrisburg Br.	S.16,T15S,R4W	161.2
22-50	Willamette	W-10	Albany Br.	S.6,T11S,R3W	119.3
22-50	Willamette	W-12	Buena Vista Ferry	S.23,T9S,R4W	106.4
22-50	Willamette	W-26	SP&S RR Br.	S.12,T1N,R1W	7.0
22-50-90	McKenzie	Mk-1	Hayden Br.	S.20,T17S,R2W	14.8
22-50-04	Santiam	S-6	I-5 Bridge	S.4,T10S,R3W	6.0

BOISE, IDAHO 83707

December 23, 1968

TO: W. E. Eldridge, Pollution Surveillance, Federal Water Pollution Control Administration
Kenneth Dyer, United States Geological Survey
Monte Richards, Idaho Fish and Game Department
Dale Ralston, Idaho Department of Reclamation
H. Tom Davis, Water Resource Board

FROM: Melvin D. Alsager, Water Pollution Control Section, Idaho Department of Health

SUBJECT: PROPOSED WATER QUALITY SURVEILLANCE NETWORK FOR THE STATE OF IDAHO

Following is a tentative water surveillance program which is to be carried out by the Idaho Department of Health in order to meet the responsibilities assigned to this Department. This proposed program should enable this Department to keep abreast of measurable water quality changes and to alert us when concentrated studies may be necessary.

This network will provide us with stations to monitor streams receiving known waste loads and to assist us in determining pollution abatement needs. The network will also provide a means for obtaining basic data on streams which have not been affected to any extent by man's activities up to the present time.

Over and above this surveillance network, the Department will continue to carry out specific studies where particular water pollution problems exist. Any and all of the water quality data obtained by this Department will be made available to interested agencies.

We would welcome the opportunity to meet with other agencies who also have a responsibility or interest in water quality in order to determine the specific data needed by the various agencies at each particular sampling station throughout the State.

mcf

STATEWIDE WATER QUALITY NETWORK PROGRAM
Stream Pollution Control Section
Idaho Department of Health

Following is a list of streams which are classified as interstate waters and which will be sampled as indicated and upon which the appropriate chemical, physical, biological, bacteriological and radiological analyses will be performed. These streams will be sampled a minimum of four times a year, which will occur normally at the different seasons or during periods of significant waste loadings, either natural or man-made.

Bear River, Preston
Cub River, Preston
Bear River, Soda Springs
Henry's Fork, Rexburg (RM 9)
Falls River, Chester
Snake River, Heise (RM 862)
Snake River, Shelley (RM 792)
Snake River, Blackfoot
Snake River, Minidoka (RM 674)
*Snake River, Milner Dam (640)
Snake River, Buhl (RM 597)
*Snake River, Hammett
*Snake River, Marsing (RM 416)
*Snake River, Weiser (RM 352)
*Snake River, Lewiston (RM 139)
*Palouse River, Princeton (RM 132)
*North Fork Coeur d'Alene River, Enaville
*Coeur d'Alene River, Cataldo (RM 164)
*Spokane River, Post Falls (RM 100)

These waters will be sampled a minimum of once a year. However, those with significant water quality changes will be sampled more frequently as needed.

Raft River Bridge (RM 46)
Goose Creek, Oakley
Bruneau River, Hot Springs (RM 22)
Malad River, Woodruff
Moyie River, Eileen (RM 5)
*Kootenai River, Copeland (RM 123)
Clark Fork River, below Cabinet Gorge Dam
Priest River, Priest River (RM 4)
*Pend Oreille River, Newport, Wn. (RM 89)
Bear Lake
*American Falls
Lake Walcott
Strike Reservoir
*Brownlee Reservoir
*Oxbow Reservoir
*Wells Canyon Reservoir
Priest Lake
Pend Oreille Lake
Coeur d'Alene Lake

*It is proposed that these sampling stations will be maintained by the FWPCA.

INTRASTATE WATERS

These waters will be sampled a minimum of twice a year for five years and continued sampling will be conducted as needed. The appropriate chemical, physical, biological, bacteriological and radiological analyses will be performed on these samples.

Island Park Reservoir

Henry's Lake

Palisades Reservoir

Gray's Lake

Blackfoot River Reservoir

Bear Lake

Magic Reservoir

Salmon Falls Reservoir

L[illegible] Lowell

Lucky Peak Reservoir

Payette Lakes

Cascade Lake

INTRASTATE STREAMS

Appropriate chemical, physical, biological, bacteriological and radiological analyses will be performed on samples from the following streams.

The following streams will be sampled a minimum of twice a year for three years and then at a less frequent period, depending upon the analytical results of the three-year study.

Source	Location
Salmon River	Stanley
Salmon River	Challis
Pahsimeroi River	Ellis
Salmon River	Salmon
Lemhi River	Leadore
Lemhi River	Salmon
Salmon River	Northfork
Middle Fork of Salmon River	Cape Horn
Middle Fork of Salmon River	Salmon River Junction
South Fork of Salmon River	Knox
South Fork of Salmon River	Mackay Bar
E.F./S.F. Salmon River	Yellow Pine
Big Lost River	Chilly
Big Lost River	Mackay Reservoir
Big Lost River	Arco
Little Lost River	Howe
Birch Creek	Birch Creek
Camas Creek	Mud Lake
Snake River	Alpine, Wyoming
Blackfoot River	Blackfoot
Cedar Draw	Filer
Deep Creek	Buhl
Salmon Falls Creek	Banbury Hot Springs
Little Wood	Carey
Little Wood	Shoshone
Big Wood	Bellevue
Big Wood	Magic Reservoir Outlet
Big Wood	Gooding
Camas Creek	Fairfield
South Fork of Boise River	Anderson Ranch Dam
Middle Fork of Boise River	Twin Springs
Robie Creek	Lucky Peak Reservoir
Indian Creek	Caldwell
Boise River	Notus
South Fork of Payette River	Garden Valley
Middle Fork of Payette River	Crouch
North Fork of Payette River	Above McCall
North Fork Payette River	Below Cascade
Payette River	Montour
Squaw Creek	Sweet
Weiser River	Tamarack
Weiser River	Weiser
Little Salmon River	New Meadows
Little Salmon River	Riggins
South Fork Clearwater River	Golden
Lochsa River	Lowell
Selway River	Lowell

Cont'd.

Source	Location
North Fork Clearwater River	Ahsahka
Potlatch River	Juliaetta
St. Maries River	Clarkia
St. Maries River	St. Maries
St. Joe River	St. Maries
St. Joe River	Avery

The following streams will be sampled a minimum of four times a year and will continue to be sampled at these intervals into the foreseeable future.

Source	Location
Salmon River	Whitebird
Teton River	Teton
Snake River	Lorenzo
Portneuf River	Lava Hot Springs
Portneuf River	Pocatello
Bear River	Bear Lake Outlet
Marsh Creek	Inkom
Rock Creek	Twin Falls
Malad River	Hagerman
Boise River	Barber
Boise River	Below Boise
Boise River	Caldwell
Payette River	Emmett
Payette River	Payette
South Fork Clearwater River	Kooskia
Clearwater	Orofino
Clearwater River	Lewiston
South Fork Coeur d'Alene River	Enaville
North Fork Coeur d'Alene River	Enaville

APPENDIX III

ESTUARINE MONITORING STATIONS

Minimum List

FWPCA ESTUARINE MONITORING STATIONS

Initiation FY 1971

PUGET SOUND

1. Port Angeles selected stations
2. Bellingham Inner Harbor (Class C water) - selected stations
3. Bellingham Bay (Class B water) - selected stations
4. Samish Bay - selected stations
5. Snohomish River mouth
6. Everett Inner Harbor (Class B water) selected stations
7. Port Gardner - selected stations
8. Guemes Channel - Anacortes - selected stations
9. Oakland Bay at Shelton - selected stations
10. Budd Inlet - Olympia selected stations
11. Puyallup River mouth
12. Duwamish River mouth
13. Inner Commencement Bay - selected stations
14. Outer Commencement Bay - selected stations
15. Elliott Bay - 2 selected stations
16. Alki Point
17. Richmond Beach
18. West Point
19. Sinclair Inlet (Bremerton - Port Orchard area) selected stations
20. Des Moines
21. Port Townsend (On Strait of Juan de Fuca side) selected stations
22. Hood Canal (preferably at Port Gamble) selected stations

OREGON COAST

1. Coos Bay selected stations
2. Reedsport (Umpqua River mouth)
3. Toledo (Yaquina River estuary)
4. Tillamook Bay selected stations

WASHINGTON COAST

1. Illwaco Boat Basin selected stations
2. Willapa Harbor - selected stations
3. Chehalis River at Montesano
4. Grays Harbor - selected stations

APPENDIX IV

COLUMBIA RIVER THERMAL EFFECTS STUDIES

RIVER TEMPERATURE REPORTING NETWORK

REGIONAL TEMPERATURE
MINIMUM LIST SITES AND SITES VI

PORTING NETWORK
CED DURING THE 1968 SURVEYS

SITE NUMBER (FROM FIGURE 1)	STATION DESCRIPTION	RIVER	RIVER MILE (R.M.)	STATION VISITED DURING 1968 SURVEYS	EXI S	DESC	ING TEMPERATURE ING DEVICES	PTION / OWNER	IS DEVICE ADEQUATE FOR RTEN	RIVER CONDITIONS AT STATION DURING 1968 SURVEYS	ADDITIONAL FIELD WORK NECESSARY
1	Harrington Point	Columbia	23.5	yes						Could be fairly well mixed	yes
2	Clatskanie	Columbia	53.8	no		There	graph	PGE	yes	Well mixed river condition	no
3	Longview	Columbia	66.0	no		There	graph	PGE	yes	Well mixed river condition	no
4	Cowlitz River (mouth)	Cowlitz	17.3	no		None					yes
5	Prescott	Columbia	75.0	no		There	graph	PGE	yes	Well mixed river condition	no
6	Swan Island/St. Johns Bridge	Willamette	6.0	yes		There	graph	FWPCA	no	Year-round temp. x-sect. needed	yes
7	Vancouver	Columbia	106.5	no		There	graph	U.S.G.S.	yes	Completely mixed river condition	no
8	Warrendale	Columbia	140.8	yes		There	graph	PGE	yes	Completely mixed river condition	no
9	Bonneville Dam	Columbia	145.5	yes		There	eter	C of E	no	Tailrace well mixed	no
10	The Dalles Port Commission Dock	Columbia	189.2	yes		None				Well mixed river condition	no
11	The Dalles Dam	Columbia	191.5	yes		There	eter	C of E	no	Appears well mixed	no
13	Bridge d/s of John Day Dam	Columbia	208.0	yes		There	graph	AEC	yes	Well mixed river condition	no
13	John Day Dam	Columbia	215.6	yes		U/S	rmos	C of E	no	Dam still under constr. at time	yes
16	Umatilla Bridge	Columbia	290.5	yes		There	graph	AEC	yes	River well mixed at this point	no
16	McNary Dam	Columbia	292.0	yes		There	eter	C of E	no	Tailrace is well mixed	no
17	Washington - Oregon Border	Columbia	312.3	yes		None				Fairly well mixed at that time	yes
19	Kiona or Bridge at West Richland	Yakima	*	yes		None				Well mixed @ Kiona maybe @ bridge	yes
20	Pasco	Columbia	329.0	no		There	graph	AEC	yes	Completely mixed	no
20	Richland	Columbia	338.0	no		There	graph	AEC	yes	Completely mixed	no
23	D/S of Priest Rapids Dam	Columbia	395.6	yes		There	graph	AEC	yes	Completely mixed	no
23	Priest Rapids Dam	Columbia	397.1	yes		There	graph	Grant Co. PUD	possible	Tailrace completely mixed	no
24	Wanapum Dam	Columbia	415.0	yes		There	graph	Grant Co. PUD	possible	Tailrace completely mixed	yes
25	Rock Island Dam	Columbia	453.4	yes		None				Tailrace and forebay well mixed	no
26	Monitor Washington	Wenatchee	5.8	yes		None				Completely mixed river condition	no
27	Rocky Reach Dam	Columbia	474.5	yes		There	graph	Chelan Co. PUD	no	Tailrace is completely mixed	no
30	Wells Dam	Columbia	516.6	yes		None				Tailrace is completely mixed	no
31	Monse or Malott, Washington	Okanogan	*	yes		None				Both locations are vert. stratified	yes
32	Chief Joseph Dam	Columbia	545.1	yes		There	eter	AEC	no	River d/s of dam is well mixed	no
33	Bridge below Grand Coulee Dam	Columbia	596.3	yes		There	graph	AEC	yes	River d/s of dam is well mixed	no
34	Little Falls Dam	Spokane	30.0	yes		None				Questionable mixed condition	yes
35	Kettle Falls, Washington	Columbia	698.6	yes		There	graph	AEC	probable	Questionable mixed condition	yes
35	North Port, Washington	Columbia	734.1	yes		There	graph	AEC	yes	Completely mixed river condition	no
41	Ice Harbor Dam	Snake	9.7	yes		There	eter	C of E	no	Tailrace well mixed	no
42	Little Goose Dam	Snake	70.3	no		None					yes
44 & 46	Clarkston and Lewston, Idaho	Snake	132.9	no		There	graph	BCF	no	Future backwater from L. Granite	yes
46	Washington Water Power Dam	Clearwater	4.6	yes		There	eter	WWP Co.	no	Future backwater from L. Granite	yes
47	Grand Ronde River (mouth)	Grand Ronde	*	no		None					yes
49	Mouth of Salmon River	Salmon	*	no		None					yes
50	White Bird	Salmon	53.5	yes		None				Completely mixed river condition	no
52	Appaloosa Damsite	Snake	213.0	no		None					yes
53	Hells Canyon Dam	Snake	247.0	yes		There	graph	FWPCA	no	Completely mixed	no
54	Oxbow Dam	Snake	273.0	yes		There	graph	FWPCA	no	Completely mixed	no
55	Brownlee Dam	Snake	285.0	yes		There	graph	FWPCA/Idaho Power	no	Completely mixed	no
56	Weiser, Idaho	Snake	351.2	yes		None				Well mixed	no
60	Oregon - Idaho Border	Snake	416.0	yes		None				Questionable mixed condition	yes
61	King Hill, Idaho	Snake	545.3	yes		None				Well mixed	no
62	Milner Dam	Snake	640.0	yes		There	graph	FWPCA	no	No flow during part of year	yes
64	American Falls Dam	Snake	714.0	yes		None				Completely mixed	no

XXXXXXXXXXXXXXXXXXXX
See the following pages
for greater detail.
XXXXXXXXXXXXXXXXXXXX

REGIONAL TEMPERATURE ... PORTING NETWORK
MINIMUM LIST SITES AND SITES VI... CED DURING THE...

SITE NUMBER (FROM FIGURE 1)	STATION DESCRIPTION	RIVER	RIVER MILE (R.M.)	STATION VISITED DURING 1968 SURVEYS	EXI... S...	...NG TEMPERATURE ...SING DEVICES
					DESC...	...TION / OWNER
1	Harrington Point	Columbia	23.5	yes		
2	Clatskanie	Columbia	53.8	no	Ther...	...graph PGE
3	Longview	Columbia	66.0	no	Ther...	...graph PGE
4	Cowlitz River (mouth)	Cowlitz	17.3	no	None	
5	Prescott	Columbia	75.0	no	Ther...	...graph PGE
6	Swan Island/St. Johns Bridge	Willamette	6.0	yes	Ther...	...graph FWPCA
7	Vancouver	Columbia	106.5	no	Ther...	...graph U.S.G.S
8	Warrendale	Columbia	140.8	yes	Ther...	...graph PGE
9	Bonneville Dam	Columbia	145.5	yes	Ther...	...meter C of E
10	The Dalles Port Commission Dock	Columbia	189.2	yes	None	
11	The Dalles Dam	Columbia	191.5	yes	Ther...	...meter C of E
13	Bridge d/s of John Day Dam	Columbia	208.0	yes	Ther...	...graph AEC
13	John Day Dam	Columbia	215.6	yes	U/S ...	...rmos C of E
16	Umatilla Bridge	Columbia	290.5	yes	Ther...	...graph AEC
16	McNary Dam	Columbia	292.0	yes	Ther...	...meter C of E
17	Washington - Oregon Border	Columbia	312.3	yes	None	
19	Kiona or Bridge at West Richland	Yakima	*	yes	None	
20	Pasco	Columbia	329.0	no	Ther...	...graph AEC
20	Richland	Columbia	338.0	no	Ther...	...graph AEC
23	D/S of Priest Rapids Dam	Columbia	395.6	yes	Ther...	...graph AEC
23	Priest Rapids Dam	Columbia	397.1	yes	Ther...	...graph Grant C...
24	Wanapum Dam	Columbia	415.0	yes	Ther...	...graph Grant C...
25	Rock Island Dam	Columbia	453.4	yes	None	
26	Monitor Washington	Wenatchee	5.8	yes	None	
27	Rocky Reach Dam	Columbia	474.5	yes	Ther...	...graph Chelan C...
30	Wells Dam	Columbia	516.6	yes	None	
31	Monse or Malott, Washington	Okanogan	*	yes	None	
32	Chief Joseph Dam	Columbia	545.1	yes	Ther...	...meter AEC
33	Bridge below Grand Coulee Dam	Columbia	596.3	yes	Ther...	...graph AEC
34	Little Falls Dam	Spokane	30.0	yes	None	
35	Kettle Falls, Washington	Columbia	698.6	yes	Ther...	...graph AEC
35	North Port, Washington	Columbia	734.1	yes	Ther...	...graph AEC
41	Ice Harbor Dam	Snake	9.7	yes	Ther...	...meter C of E
42	Little Goose Dam	Snake	70.3	no	None	
44 & 46	Clarkston and Lewston, Idaho	Snake	132.9	no	Ther...	...graph BCF
46	Washington Water Power Dam	Clearwater	4.6	yes	Ther...	...meter WWP Co.
47	Grand Ronde River (mouth)	Grand Ronde	*	no	None	
49	Mouth of Salmon River	Salmon	*	no	None	
50	White Bird	Salmon	53.5	yes	None	
52	Appaloosa Damsite	Snake	213.0	no	None	
53	Hells Canyon Dam.	Snake	247.0	yes	Ther...	...graph FWPCA
54	Oxbow Dam	Snake	273.0	yes	Ther...	...graph FWPCA
55	Brownlee Dam	Snake	285.0	yes	Ther...	...graph FWPCA/Id...
56	Weiser, Idaho	Snake	351.2	yes	None	
60	Oregon - Idaho Border	Snake	416.0	yes	None	
61	King Hill, Idaho	Snake	545.3	yes	None	
62	Milner Dam	Snake	640.0	yes	Ther...	...graph FWPCA
64	American Falls Dam	Snake	714.0	yes	None	

A

PORTING NETWORK
ED DURING THE 1968 SURVEYS

NG TEMPERATURE SING DEVICES / TION / OWNER		IS DEVICE ADEQUATE FOR RTRN	RIVER CONDITIONS AT STATION DURING 1968 SURVEYS	ADDITIONAL FIELD WORK NECESSARY
			Could be fairly well mixed	yes
graph	PGE	yes	Well mixed river condition	no
graph	PGE	yes	Well mixed river condition	no
				yes
graph	PGE	yes	Well mixed river condition	no
graph	FWPCA	no	Year-round temp. x-sect. needed	yes
graph	U.S.G.S.	yes	Completely mixed river condition	no
graph	PGE	yes	Completely mixed river condition	no
meter	C of E	no	Tailrace well mixed	no
			Well mixed river condition	no
meter	C of E	no	Appears well mixed	no
graph	AEC	yes	Well mixed river condition	no
rmos	C of E	no	Dam still under constr. at time	yes
graph	AEC	yes	River well mixed at this point	no
meter	C of E	no	Tailrace is well mixed	no
			Fairly well mixed at that time	yes
			Well mixed @ Kiona maybe @ bridge	yes
graph	AEC	yes	Completely mixed	no
graph	AEC	yes	Completely mixed	no
graph	AEC	yes	Completely mixed	no
graph	Grant Co. PUD	possible	Tailrace completely mixed	no
graph	Grant Co. PUD	possible	Tailrace completely mixed	yes
			Tailrace and forebay well mixed	no
			Completely mixed river condition	no
graph	Chelan Co. PUD	no	Tailrace is completely mixed	no
			Tailrace is completely mixed	no
			Both locations are vert. stratified	yes
meter	AEC	no	River d/s of dam is well mixed	no
graph	AEC	yes	River d/s of dam is well mixed	no
			Questionable mixed condition	yes
graph	AEC	probable	Questionable mixed condition	yes
graph	AEC	yes	Completely mixed river condition	no
meter	C of E	no	Tailrace well mixed	no
				yes
graph	BCF	no	Future backwater from L. Granite	yes
meter	WWP Co.	no	Future backwater from L. Granite	yes
				yes
				yes
			Completely mixed river condition	no
				yes
graph	FWPCA	no	Completely mixed	no
graph	FWPCA	no	Completely mixed	no
graph	FWPCA/Idaho Power	no	Completely mixed	no
			Well mixed	no
			Questionable mixed condition	yes
			Well mixed	no
graph	FWPCA	no	No flow during part of year	yes
			Completely mixed	no

B

No.	Station Description	River	R.M.	Existing	New	Remarks
1	Harrington Point	Columbia	23.5		x	Temp x-sect. req'd.
2	Clatskanie	Columbia	53.8	x		
3	Longview	Columbia	66.0	x		
5	Prescott	Columbia	75.0	x		
6	Swan Island/St.John's Bridge	Willamette	6.0		x	Temp x-sect. req'd
7	Vancouver	Columbia	106.5	x		
8	Warrendale	Columbia	140.8	x		
10	The Dalles Port Commission Dock	Columbia	189.2		x	
13	Bridge below John Day Dam	Columbia	208.0	x		
16	Umatilla Bridge d/s of McNary Dam	Columbia	290.5	x		
17	Washington - Oregon Border	Columbia	312.3		x	Additional Temp. x-sect req'd.
20	Pasco*	Columbia	329.0	x		
20	Richland*	Columbia	338.0			
23	D/S of Priest Rapids Dam	Columbia	395.6	x		
24	Wanapum Dam	Columbia	415.0		x	Initially for checking purposes.
25	Rock Island Dam	Columbia	453.4		x	
27	Rocky Reach Dam	Columbia	474.5		x	
30	Wells Dam	Columbia	516.6		x	
32	Chief Joseph Dam	Columbia	545.1		x	
33	Bridge d/s of Grand Coulee Dam	Columbia	596.3	x		
34	Little Falls Dam	Spokane	30.0		x	Temp. x-sect. req'd.
35	Kettle Falls*	Columbia	698.6	x		Add. Temp. x-sect. desired.
35	Northport*	Columbia	734.1	x		
41	Ice Harbor Dam	Snake	9.7		x	
	TOTAL THERMOGRAPHS			- 13	11	= 24

* One station will be eliminated from the system in the future

ERRATA SHEET

Water Quality Monitoring Network

FWPCA, Northwest Region

TABLE I Changes:

Kootenai River Basin - Page 1

1. Change Porthill to Copeland
2. For Eileen, Moyie R. change Collection Agency to ISDH.

Snake River Basin - Page 3

1. Delete Woodruff, Malad R., Idaho
2. Change Raft River Bridge to Yale, Raft River, Idaho
3. Add Twin Falls, Rock Creek, Idaho (ISDH) (Q)
4. Change Oakley, Goose Creek, Idaho to Burley, Goose Creek, Idaho
5. Add Hagerman, Malad R., Idaho (ISDH) (Q)
6. Change Hot Springs, Bruneau R. to Bruneau, Bruneau R., Idaho
7. Delete Lorenzo, Snake River, Idaho
8. For American Falls Dam, change Collection Agency to ISDH
9. Change Minidoka, Snake R. to Lake Walcott, Snake R., (ISDH) (Q)
10. Add Strike Dam, Snake River, Idaho (ISDH) (Q)
11. Add Swan Falls, Snake River, Idaho (ISDH) (Q)

TABLE II Changes - Page 1:

1. Change Kootenai River at Porthill to Kootenai River at Copeland

TABLE II Changes - Page 4:

1. Change Station No. 403008, Columbia R. at Astoria to 403009